

جامعة ساوة الاهلية
كلية التقنيات الصحية والطبية
قسم التخدير
اللجنة العلمية

Intravenous cannula



جامعة ساوة

كلية التقنيات الصحية والطبية

قسم تقنيات التخدير

المرحلة (الثانية)

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Anatomy and physiology

- ❖ Approximately 2/3 of total blood volume is in the veins which transport deoxygenated blood to the heart from the tissues
- ❖ Veins are thin-walled, fibrous, have a large diameter and low pressure
- ❖ Veins contract to propel the blood through the vein towards the heart
- ❖ Some veins contain valves to regulate the one way flow to the heart (usually lower limbs)
- ❖ The skeletal muscle pump influences venous return
- ❖ Superficial and deep veins



Indications for insertion of Intravenous Cannula

1. Administration of IV (Intravenous) Fluids
2. Total Parenteral Nutrition
3. Blood / Blood Products
4. Administration of Intravenous Fluid Therapy
5. Administration of Intravenous Drug Therapy -
Continuous or Intermittent
6. Pre-procedure Venous Access
7. Selective pre – operative Venous Access
8. Blood Sampling

Flashback
chamber

Needle grip

Injection port cap

Catheter hub
+ wings

Catheter

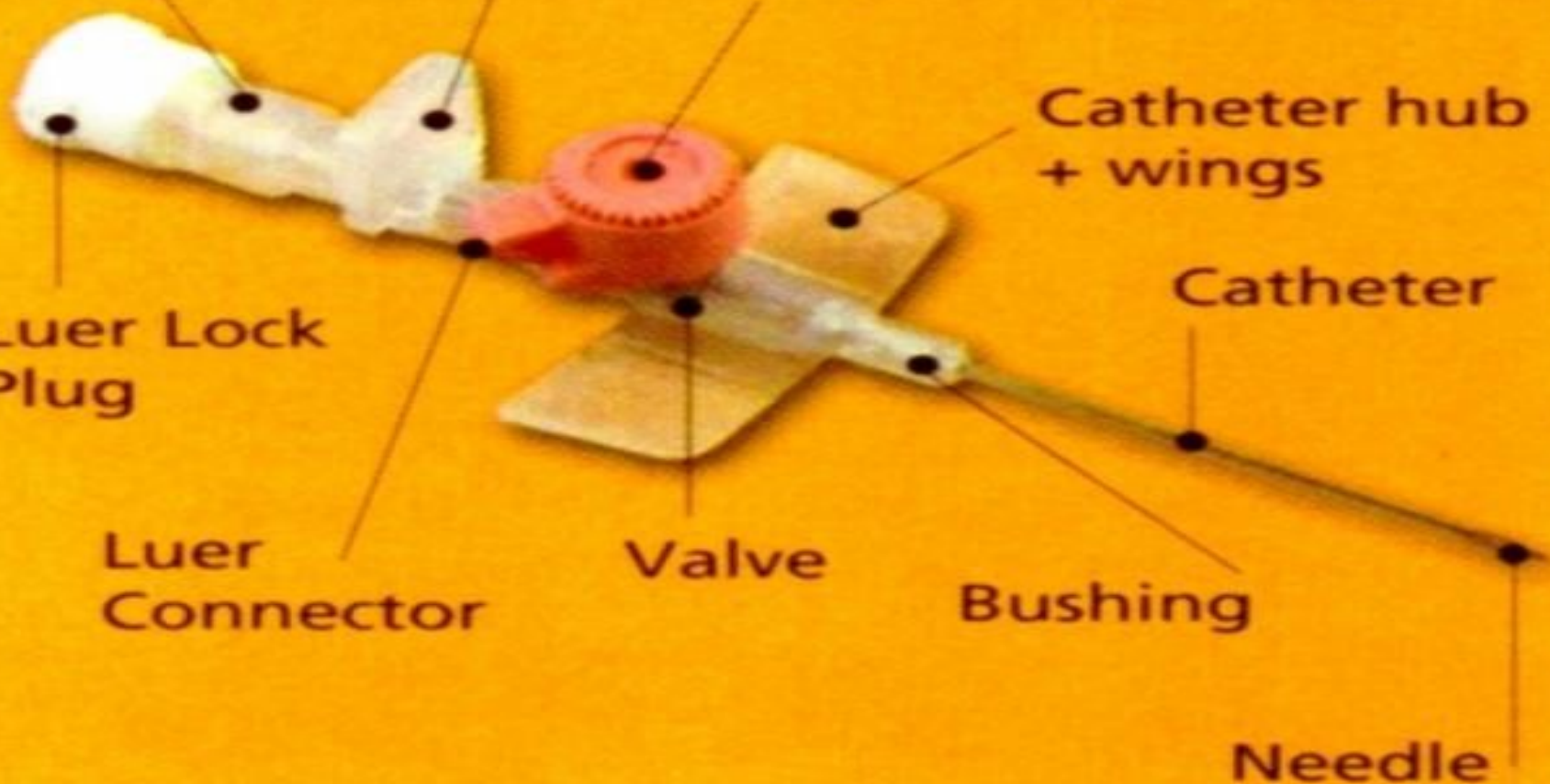
Luer Lock
Plug

Luer
Connector

Valve

Bushing

Needle



Cannula

- **14G** • Large volume replacement
- **16G** • Rapid transfusion of whole blood or blood components
- **18G** • IV maintenance, NBM patients
- **20G** • IV analgesia
- **22G** • Pediatrics, elderly, chemotherapy patients
- **24G** • Pediatrics, neonates

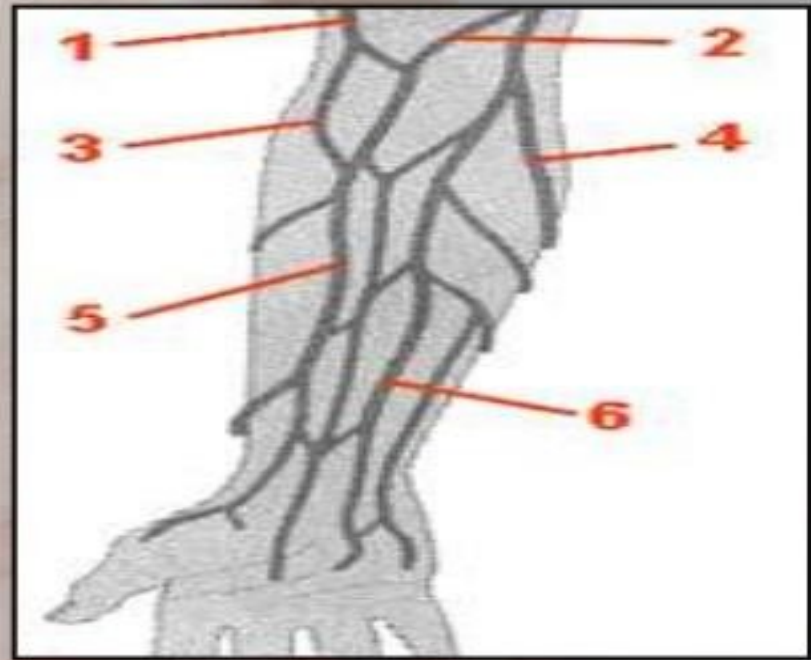


Sites for Insertion of Peripheral IV Cannula

- Selecting a vein

Veins of the Forearm

1. Cephalic vein
2. Median Cubital vein
3. Accessory Cephalic vein
4. Basilic vein
5. Cephalic vein
6. Median antebrachial vein



REQUIREMENTS

- Branula
- Tegaderm / Plaster
- Alcohol swab
- Gloves
- Tourniquet
- IV stopper or tubing set
- Splint (if necessary)
- Heparin saline or drip



Before inserting cannula

- ☐ The tourniquet is applied above the IV insertion site and should not be left on for more than 2-3 minutes
- ☐ Don gloves and clean site with appropriate solution using a circular outward movement
- ☐ Allow site to air dry or dry with sterile swab



DURING PROCEDURES

**Tie the tourniquet 6" (15cm)
above the intended site.**



DURING PROCEDURES

Clean the puncture site with alcohol swab 5-10cm diameters starting from the site outwards and let it dry.



DURING PROCEDURES

Press lightly the vein using the thumb of the non dominant hand about 4cm below the intended site.

Potential complications

1. Extravasation
2. Hematoma
3. Phlebitis
4. Venous Spasm
5. Occlusion
6. Thrombophlebitis
7. Infection



Extravasation

The infiltration of a drug from an I.V. line into surrounding tissue.

Causes

- Catheter erodes through the vessel wall at a second point,
- Increased venous pressure causes leakage around the venipuncture site
- When a needle pulls out of the vein.
- Vesicant drugs/solutions may cause severe tissue injury

Signs & Symptoms

- Oedema and changes in the site's appearance
- Coolness of the skin.
- Slowing of infusion
- Pain or a feeling of tightness around the site.
- Possible consequences include necrotic ulcers, infection, disfigurement, and loss of function.



Intervention

- Remove cannula
- Elevate affected arm
- Apply ice pack (early) or warm compress (late)

Haematoma

Localised collection of extravasated blood, usually clotted, in an organ or tissue.

Cause

- Blood leaking out of the vein into the tissue due to puncture or trauma

Signs & Symptoms

- Swelling, tenderness and discolouration

Prevention

- Proper device insertion
- Pressure over site on removal of cannula

Intervention

- Apply appropriate pressure bandage, monitor the site



Phlebitis Inflammation of the vein

Cause

- Poor aseptic technique
- High osmolarity I.V. infusions or drugs
- Trauma to the vein during insertion/incorrect cannula gauge
- Prolonged use of the same site

Signs & Symptoms

- Tenderness, redness, heat and Oedema
- Advanced-induration, palpable venous cord

Intervention

- Remove cannula
- Apply warm compress
- Observe for signs of infection



Venous spasm

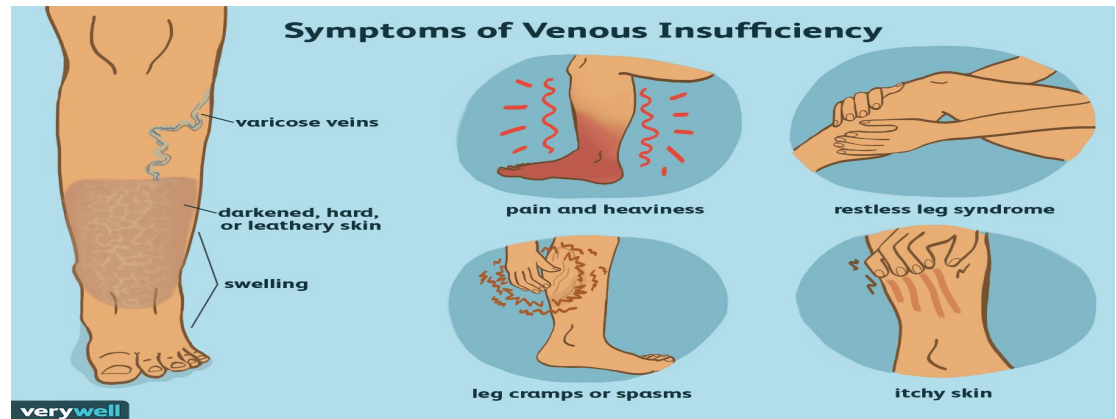
Spasm of the vein wall

Cause

- Patient anxiety
- Cold I.V. fluids
- Drug irritation
- Trauma to the vein during cannula insertion

Signs & Symptoms

- Pain
- Slowing of the I.V. infusion
- Blanching at the insertion site
- Vein difficult to palpate



Intervention

- Apply warm compress
- Slow the infusion rate
- Reassure the patient

Occlusion

Slowing or cessation of fluid infusion due to:

- Fibrin formation in or around the tip of the cannula
 - Mechanical occlusion (kink) of the cannula

Cause

- Cannula not flushed
- Kinking of the cannula
- Back flow or interrupted flow

Signs & Symptoms

- I.V. not running
- Blood in the line
- Discomfort



Intervention

- Check for kinks in cannula
- Raise IV higher
- Remove cannula

Thrombophlebitis

Formation of a thrombus and inflammation in the vein, usually occurs after phlebitis.

Cause

- Injury to the vein
- Infection
- Chemical irritation
- Prolonged use of the same vein

Signs & Symptoms

- Tenderness/redness
- Heat/oedema
- Cordlike appearance of the vein
- Slowing of the IV infusion



Intervention

- Remove cannula
- Observe for signs of infection
- Change cannula frequently (48 - 72hrs)

Infection

Pathogen in the surrounding tissue of the I.V. site.

Cause

- Lack of asepsis
- Prolonged use of the same site

Signs & Symptoms

- Tenderness and swelling
- Erythema/purulent drainage



Intervention

- Remove cannula
- Antibiotics may be required
- Documentation

Thank you