

CLINICAL SKILLS EDUCATION AND TESTING CENTRE

Clinical Skills Course II

Clinical Procedures Part II

Venipuncture, IV Cannulation & Drug administration

Hiba Al-Qallab

MSc Critical Care

Outline

- ✓ Introduction
- ✓ Definition of terms: Venipuncture, IV Cannulation & drug administration
- ✓ Indications, contraindications and risks
- ✓ Equipment and supplies
- ✓ Venipuncture procedure steps
- ✓ IV Cannulation procedure steps
- ✓ Drug administration procedure steps
- ✓ Additional notes
- ✓ Summary

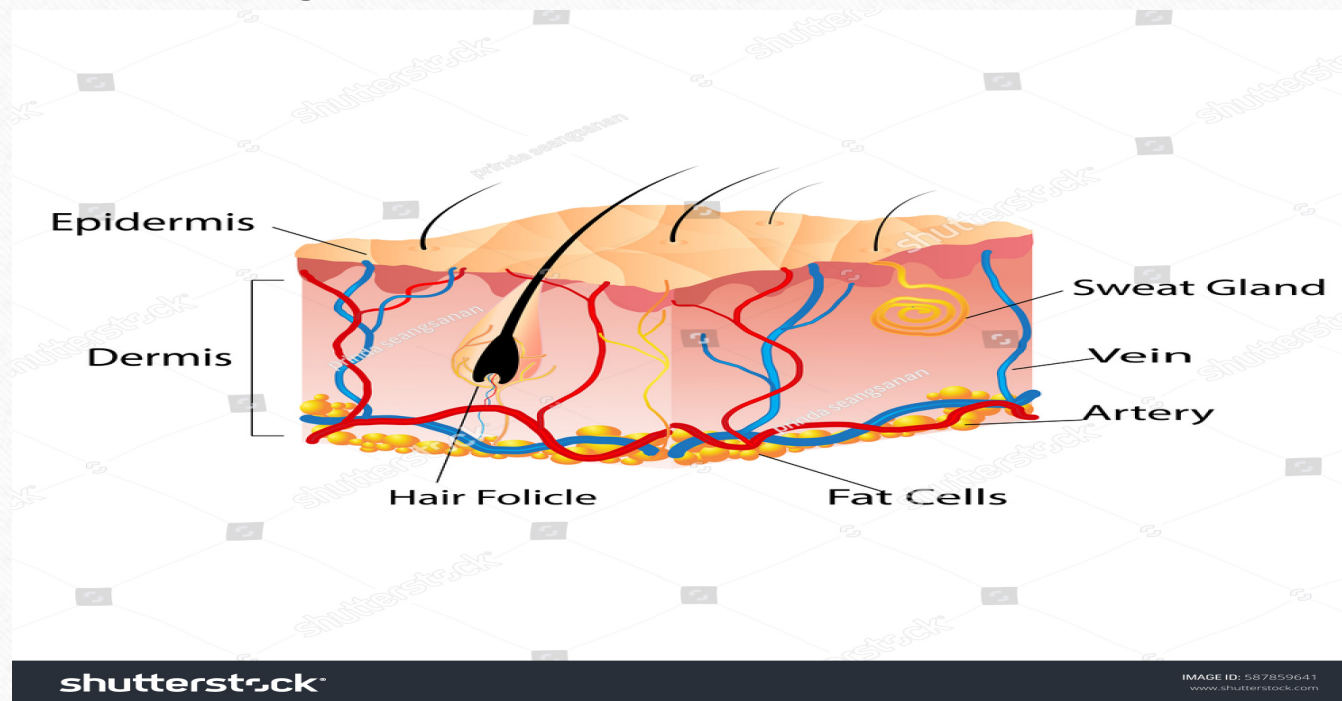
Introduction

- Regarding the distribution of blood volume within the circulation, around 70-80% of the blood volume is found in the venous system.
- Veins are blood vessels that carry blood from the body toward the heart, which are components of the cardiovascular system, that circulates blood to provide nutrients to the cells of the body. Veins are less muscular than arteries and are often closer to the skin.

(Klabunde, 2016)

- To perform any IV therapy procedures effectively, a clinical understanding of the anatomy and physiology of the skin and peripheral venous system is essential.
- Veins are classified in a number of ways, including superficial vs. deep, pulmonary vs. systemic, and large vs. small.

(Bailey, 2017)



Venipuncture



- The term **venipuncture** describes the procedure of inserting a needle into a vein, usually for the purpose of withdrawing blood for haematological, biochemical or bacteriological analysis
- **It** is one of the most commonly performed procedures which carried out skillfully, carefully and accurately, will provide high quality blood samples without causing discomfort to the patient

(Whitehead, 2010)

Venipuncture

- **Indications:**

- **Diagnostic:** Obtain blood sample for analysis.
- **Therapeutic:** drug administration, Donation & transfusion.

- **Contraindications:**

- ✓ The presence of injury or damage
- ✓ The presence of infection as suggested by inflammation, phlebitis, cellulitis.

- **Risks:**

- infection, hitting a nerve or artery

Equipment and supplies

- Skin cleansing wipes
- Tourniquet
- Gloves
- Gauze
- Adhesive dressing
- Needles
- Blood collection tube(s)
- Sharps container



Venipuncture procedure

- ✓ patient preparation
- ✓ site selection
- ✓ locating a vein
- ✓ **Venipuncture**

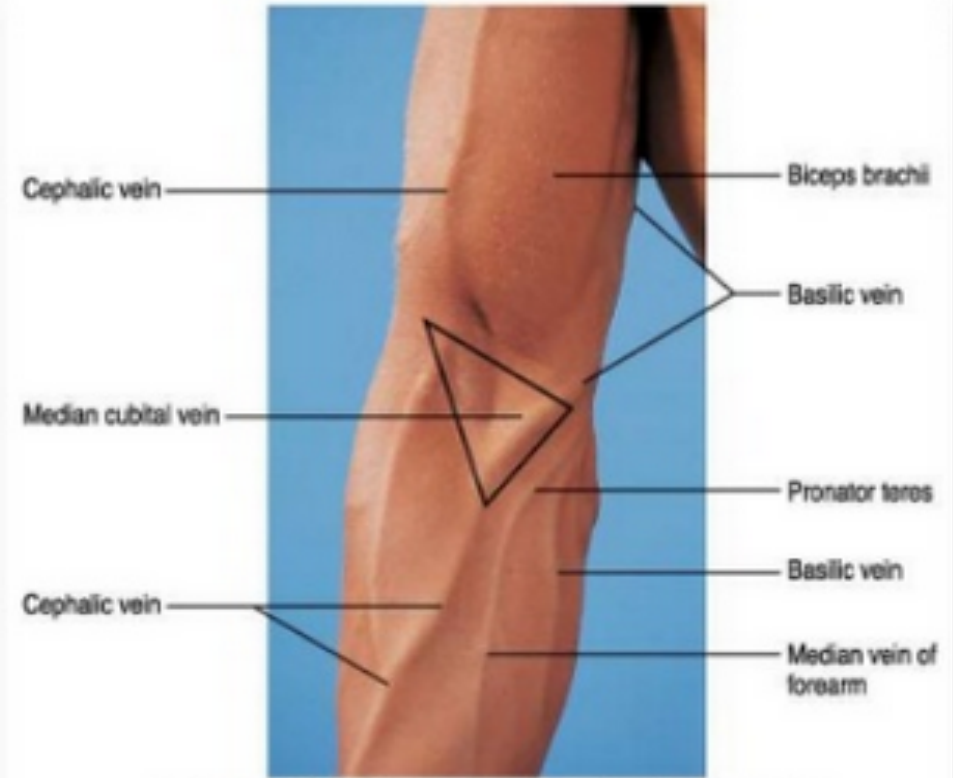
Venipuncture procedure

- **patient preparation**
 - ✓ The patient should sit in a suitable chair or lying down.
 - ✓ Support arm on pillow & position the patient's arm as needed
 - ✓ Explain procedure; steps, duration, provide honest and appropriate information
 - ✓ History of allergies, and current medication

Venipuncture procedure

- **Site selection**..... factors:
 - ✓ Suitability of location....., Condition of vein, Purpose of puncture
 - ✓ Arm vein are mostly used (the best source to obtain blood).
 - ✓ Never use an arm with: Arteriovenous (AV)fistula, shunt, edema, decreased sensation, areas of previous venipuncture or close to infection
 - ✓ Healthy veins feel soft and will refill when depressed
 - ✓ Always begin from distal to proximal.
 - ✓ Preferred sites are the intecubital fossa (the median cubital vein) and Back of hand (Cephalic vein)

Veins of the hand



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Venipuncture procedure

- **locating a vein**

- ✓ There are two stages to locating a vein:

1. **Visual inspection**

2. **Palpation**



Palpate to locate a vein by gentle tapping using your fingers

Venipuncture procedure steps

Think Action & Rationale



WHAT are you doing?



WHY are you doing it?

Venipuncture procedure steps

- **Approach and Communication**
 - **Introduce** yourself & check patient's ID (verbally and using ID bracelet and check identity with request form.
 - **Explain** the procedure & gain consent
 - **Check** for allergies (verbally and using the chart)

Venipuncture procedure steps

- **Sterility:**
 - **Clean and prepare** procedure equipment: gloves, alcohol wipe, tourniquet, needle and syringe, blood bottles, gauze, tape, request form, sharps bin
 - Perform **hand hygiene** and put on **gloves**.
- Ensure patient comfortable and assess both arms for **suitable veins**

Venipuncture procedure steps

- **Apply tourniquet** 5 to 8 cm above the insertion site
- Ask the patient to open and close of the fist



Venipuncture procedure steps

- **Palpate** veins to distinguish structures



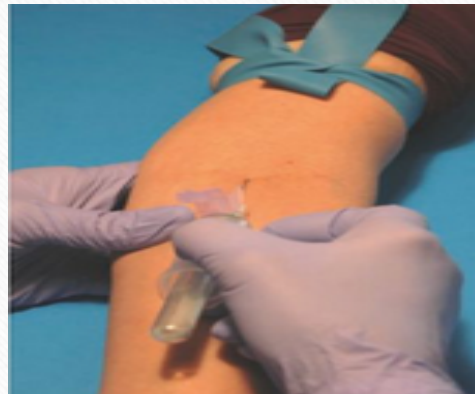
Venipuncture procedure steps

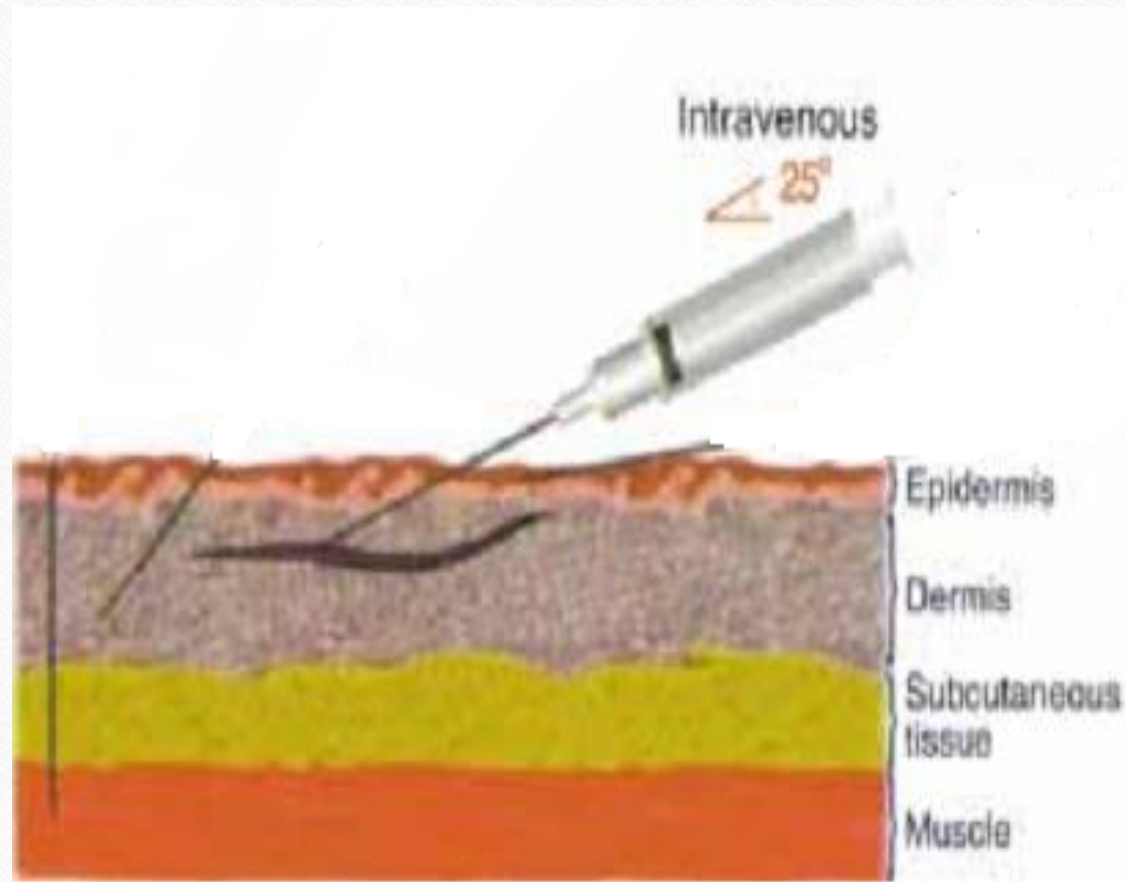
- **Clean** the venipuncture site using fresh alcohol wipe by circular motion (**DO NOT TOUCH THE PUNCTURE SITE AGAIN**)



Venipuncture procedure steps

- With your non-dominant hand; grasp the patient's arm firmly using your thumb and anchor the vein.
- **Insert** the needle at 25_30 degree parallel with bevel up aim to insert the needle swiftly through the skin and into the lumen of the vein, avoiding trauma





Venipuncture procedure steps

- **Release** tourniquet and **use** syringe correctly to draw blood (do not change hands during collection).
- **Apply** gauze to the needle insertion site and remove needle, apply pressure to gauze for 2-3 minutes (or ask patient to do this).



Venipuncture procedure steps

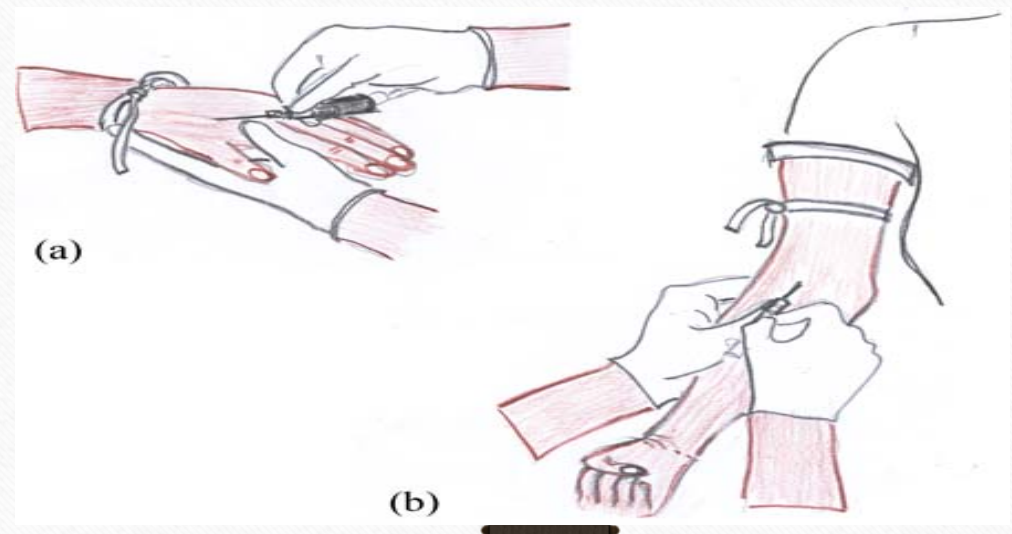
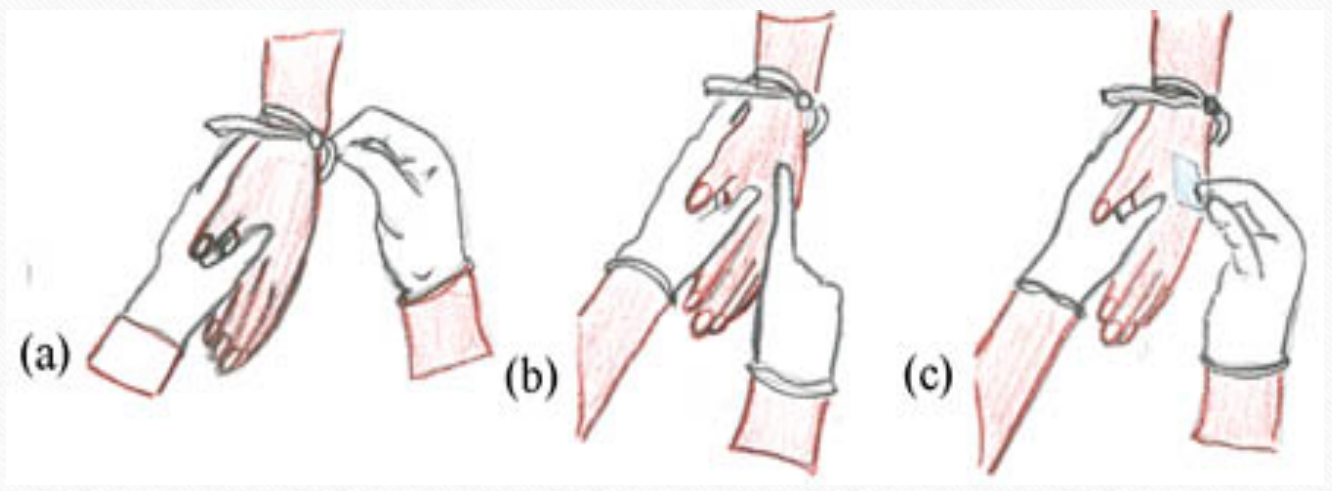
- Collect the blood in the correct tubes.



Venipuncture procedure steps

- Do not recap needle.
- Immediately place needle in sharps bin.
- Write the patient details on the blood bottles.
- Leave clinical area tidy and perform hand hygiene.





IV Drug Administration

- The term “**intravenous**” means “**into the vein.**”
- A majority of inpatients receive intravenous injections. Drugs given intravenously reach the blood stream directly and reach their target site immediately. This ensures the drug activity starts without any delay.
- There are two kinds of IV medication administration:
 - **IV push** (using a syringe)
 - **IV infusion** (using a catheter)

IV Drug Administration Procedure

- ✓ Medication preparation
- ✓ Patient preparation
- ✓ Site selection
- ✓ Locating a vein
- ✓ Administration
- ✓ Documentation

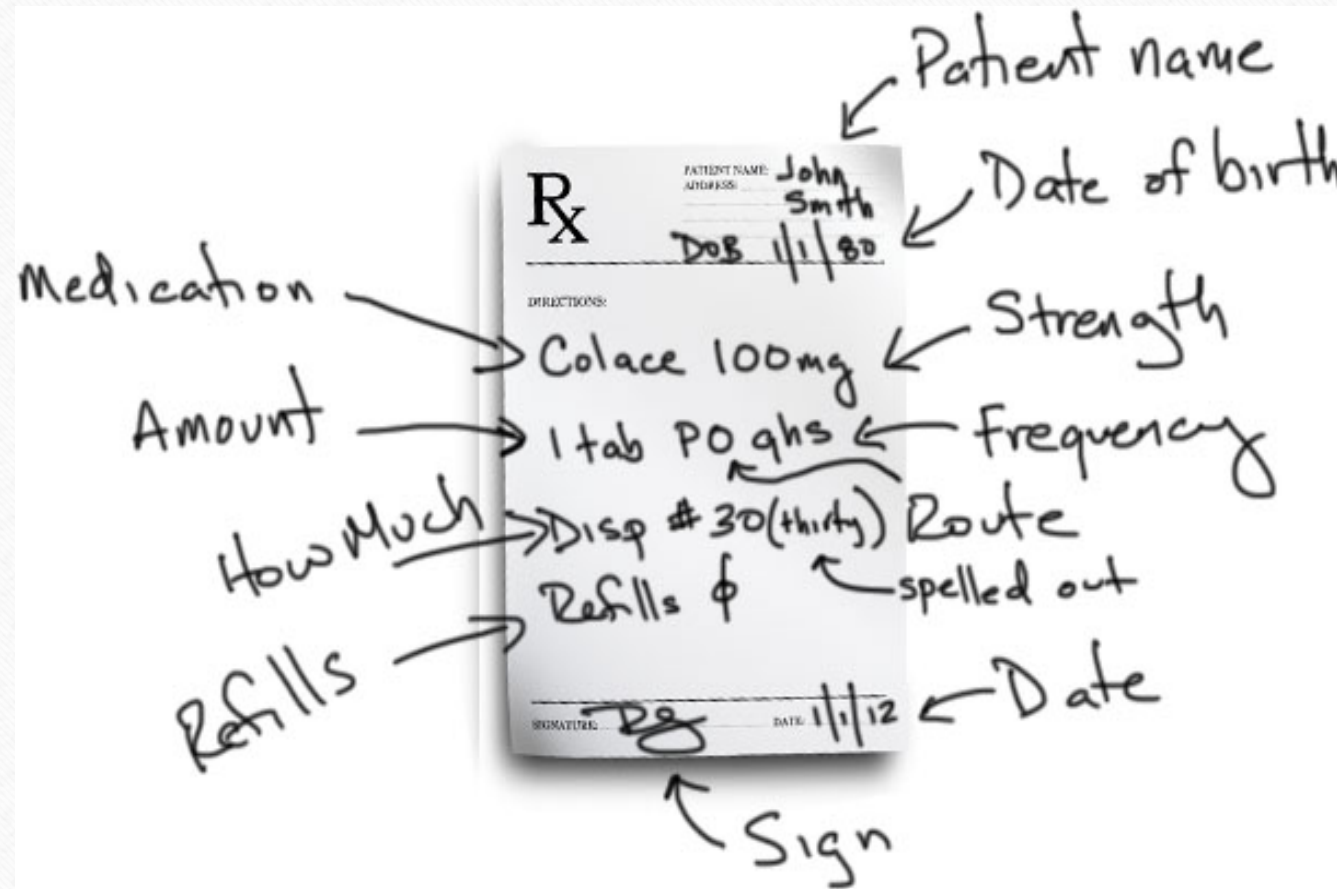
medication preparation:

- Before administer any medication the doctors and nurses should check:

The **SIX RIGHTS** of medication administration

1. Right patient
2. Right drug
3. Right route
4. Right dose
5. Right time
6. Right documentation: NOT written NOT done!

- Example of written order (prescription chart):

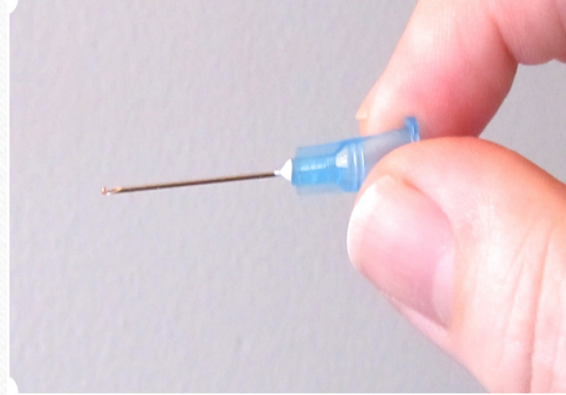


Medication Preparation:

- Intravenous drugs come in a variety of forms, the most common is rubber capped **vials** or single dose glass **ampoules**.
- **Imperative** for healthcare providers to be knowledgeable of all medications that administered, which include:
 - ✓ Indications
 - ✓ Contraindications
 - ✓ Side effects
 - ✓ Expiry date

IV Drug Administration Procedure Steps

- Perform hand hygiene and put on gloves
- Prepare drug for administration:
 - Check drug name, dose, route, time and expiry against the prescription
 - Any **allergies**????
 - Insert a syringe and withdraw amount of drug required and **dispose** of needle into sharps bin.
 - **Change** the needle, label syringe and expel any air



IV Drug Administration Procedure Steps

- **Approach and Communication**
 - Introduce yourself & check patient's ID (verbally and using ID bracelet and check identity with request form.
 - Explain the procedure & gain consent
 - Again check for any allergies (verbally)
 - Perform hand hygiene and put on gloves.
 - Ensure patient comfortable and assess both arms for suitable veins

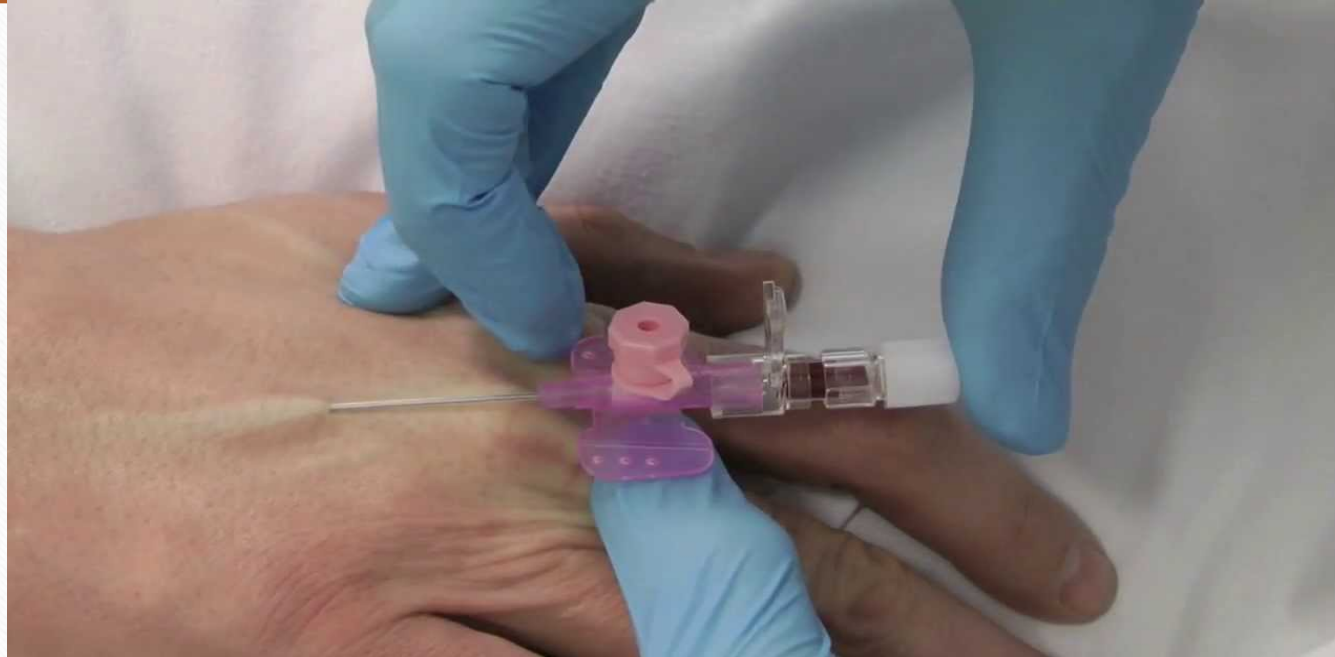
IV Drug Administration Procedure Steps

- Apply tourniquet
- Palpate veins
- Clean the area
- Insert the needle at 25_30 degree and withdraw the plunger to ensure the blood flow.
- Release the tourniquet and **administer the solution slowly**

IV Drug Administration Procedure Steps

- Discard the sharps and waste
- Sign prescription chart
- Leave clinical area clean and perform hand hygiene

IV Cannulation



IV Cannulation

INTRODUCTION:

- Peripheral venous cannulation, among the most common medical procedures, has developed the practice of medicine. It is the insertion of a Vascular Access Device (VAD) into a peripheral vein (RCN (2010)).
- Peripheral intravenous (IV) catheters allow for the safe infusion of medications, hydration fluids, blood products, and nutritional supplements.

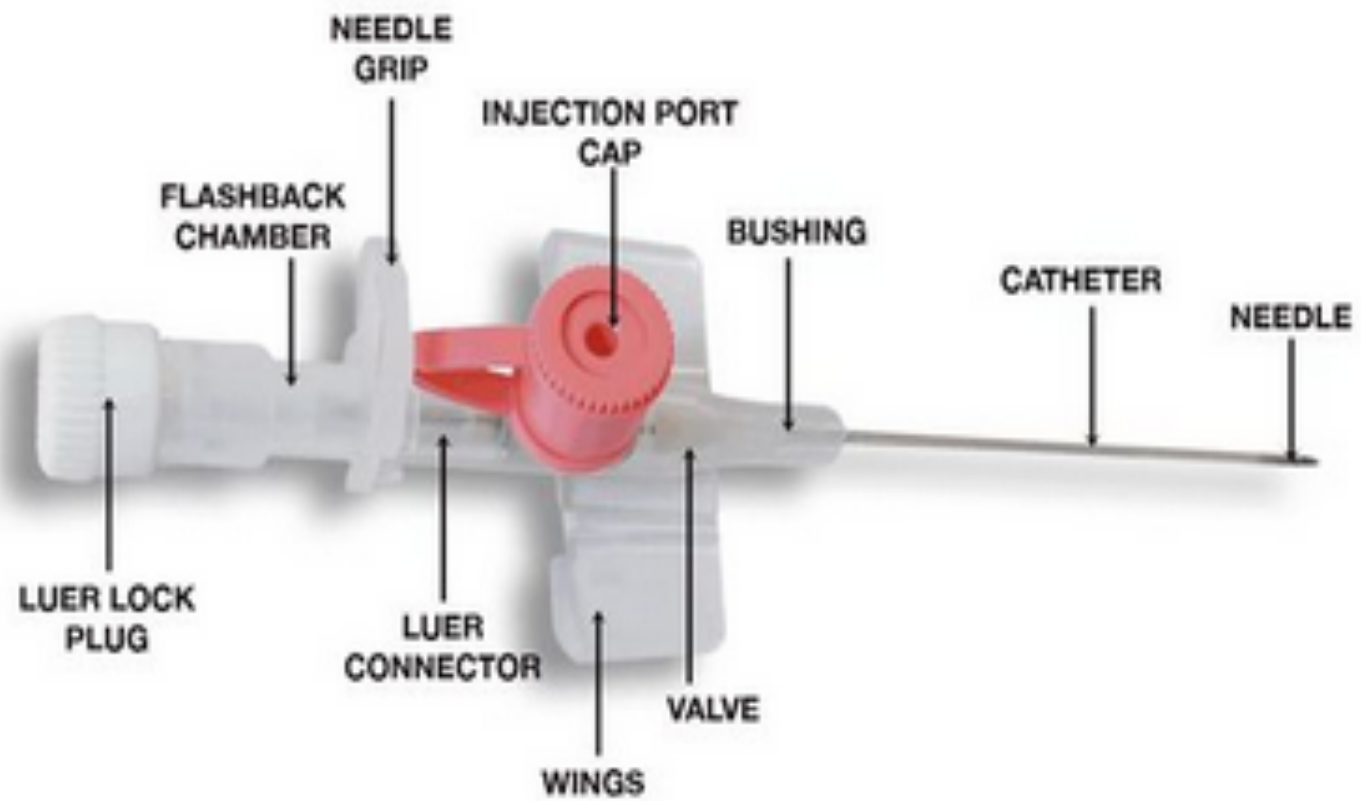
(Frank, 2011)

INTRODUCTION

- Intravenous (IV) cannula is a flexible tube containing an introducer which may be inserted into a blood vessel and are usually placed in the peripheral veins of the lower limbs (usually in the back of hand or in the arm.).



(NHS, 2013)





IV Cannulation

- **Indications:**
 - ✓ To provide therapies that cannot be administered **OR** are less effective if given by alternative routes.
 - ✓ To administer blood products.
 - ✓ To administer IV fluids.
 - ✓ To administer dyes and contrast media.

IV Cannulation

- **Contraindications:**

- ✓ The presence of injury or damage
- ✓ The presence of infection as suggested by inflammation, phlebitis, cellulitis.
- ✓ Veins which are mobile or tortuous, or sited near a bony prominence.
- ✓ If intravenous therapy is predicted to be long-term.

- **Risks:**

- ✓ Accidental damage
- ✓ Haematoma, Extravasation, Phlebitis

IV Cannulation Procedure

- ✓ Patient preparation
- ✓ Site selection
- ✓ Locating a vein
- ✓ **IV Cannulation**

IV Cannulation Procedure

- **Site selection& Locating a vein**
- ✓ Select a healthy vein.
- A suitable vein for cannulation should feel round, firm and elastic.
- Select a site where the vein is long **straight** and **accessible**.
- Avoid cannulating veins that are: Covered by bruising, inflammation, skin disease or injured skin.

Equipment and supplies

- IV cannula (appropriate size)
- IVcannula fixation dressing
- dry/ wet swabs
- 5mls sterile saline and syringe
- Tourniquet
- Sharps container
- Disposable gloves
- Hand sterillum



Cannulation procedure steps

- **Approach and Communication:**
 - Introduce yourself & check patient's ID (verbally and using ID bracelet and check identity with request form.
 - Explain the procedure & gain consent
- Prepare your equipment.
- **Prepare** flush 0.9% Sodium Chloride using 5 mls syringe and label syringe with contents.

Cannulation procedure steps

- **Sterility:** Perform **hand hygiene** and put on **gloves**.
- Ensure patient comfortable and assess both arms for **suitable veins**.
- **Apply tourniquet** 5 to 8 cm above the insertion site
- Ask the patient to open and close of the fist
- **Palpate** the vein
- **Clean** the venipuncture site using fresh alcohol wipe by circular motion (**DO NOT TOUCH AGAIN**).

Cannulation procedure steps

- **Hold** cannula correctly and insert into the vein at an **angle of 25-30 degrees** and observe for flash back of blood.
- Gently withdraw the needle back until you can see the needle tip in the plastic tube of the cannula.

Cannulation procedure steps

- Slide the whole cannula into the vein, maintaining traction to the skin
- Release tourniquet
- Remove the needle and dispose in sharps bin
- Tape securely in place
- Flush with 5mls saline
- Leave clinical area tidy, perform hand hygiene and document in patient's notes that a cannula has been inserted with the date.



Select site



clean the site with disinfectant solution



Apply tourniquet



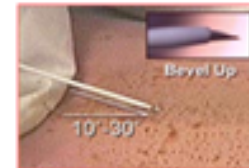
Release tourniquet



Apply gentle pressure over the vein at the catheter tip & Remove metal stylette



Insert Needle



Pull stylette back slightly, advance catheter into vein



Advance introducer and catheter



Indicator of blood return.



Additional information

- Use aseptic technique when preparing and administering fluids and medications.
- Record date and time of cannulation procedure.
- Keep the overlying skin clean and dry
- Document all system equipment used for this procedure

IV Drug Delivery Via IV Cannula

- Perform hand hygiene and put on gloves
- Prepare drug for administration:
 - Check drug name, dose, route, time and expiry against the prescription
 - Any **allergies**????
 - Insert a syringe and withdraw amount of drug required and **dispose** of needle into sharps bin.
 - **Change** the needle, label syringe and expel any air

Drug administration

- Prepare flush for administration:
 - Remember the Six Rs.
 - Draw up (0.9% sodium chloride/ distilled water) flush into a 5 mls syringe.
 - Dispose of needle in sharps bin, label syringe and expel any air

Drug administration

- **Approach and Communication**
- Check prescription chart against patient name.
- Check patient is not allergic to the drug to be administered
- Ensure patient comfortable and assess both arms for **suitable veins**.
- Check cannula for patency, look for signs of discharge, swelling, redness or pain and check date cannula was inserted (must be less than 72 hours ago)

Drug administration

- Flush 2.5mls of 0.9% sodium chloride into the cannula to confirm patency
- administer the drug slowly and **observing** the insertion site and ask the patient to voice any discomfort or pain.
- Flush again with 2.5 mls of 0.9% sodium chloride or if more than one drug is being administered then flush between each drug and after the last drug.
- Record the drug administration appropriately.
- Leave clinical area clean and perform hand hygiene.



Summary

- ✓ **Get organized:**

- Patient preparation Site selection Locating a vein..... Medication preparation

- ✓ **Approach and Communication**

- ✓ **Sterility**

- ✓ **Tourniquet**

- ✓ **Palpate**

- ✓ **Insert**

- ✓ **Collect, Administer.....**

- ✓ **DO NOT FORGET** the six R's of medication administration and allergies.

References

Nottingham University Hospitals NHS Trust (2013). PERIPHERAL VENOUS CANNULATION GUIDELINES.

Standards for Infusion Therapy 3rd. Edition. RCN, (2010). Royal College of Nursing, London.

Frank, R. (2011). Peripheral venous access in adults. Up to date, *13*(3-4), 147-148.

Practical part

