Practice anaesthetic equipements lecture

I.V CANULAE AND GIVING SETS

L2+L3

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Cannula

Define as a small plastic tube inserted into vein or(artery) usually in the hand or arm

INDICATIONS:

1- I.V fluid therapy

2- I.V drugs administration

3- transfusion of blood products

4- collection of blood sampling

5- I.V administration of contrast agents for radiologicalinterventions.

Cannula consist of:

1-needle with bevel end

2- catheter

3-catheter hub + wings

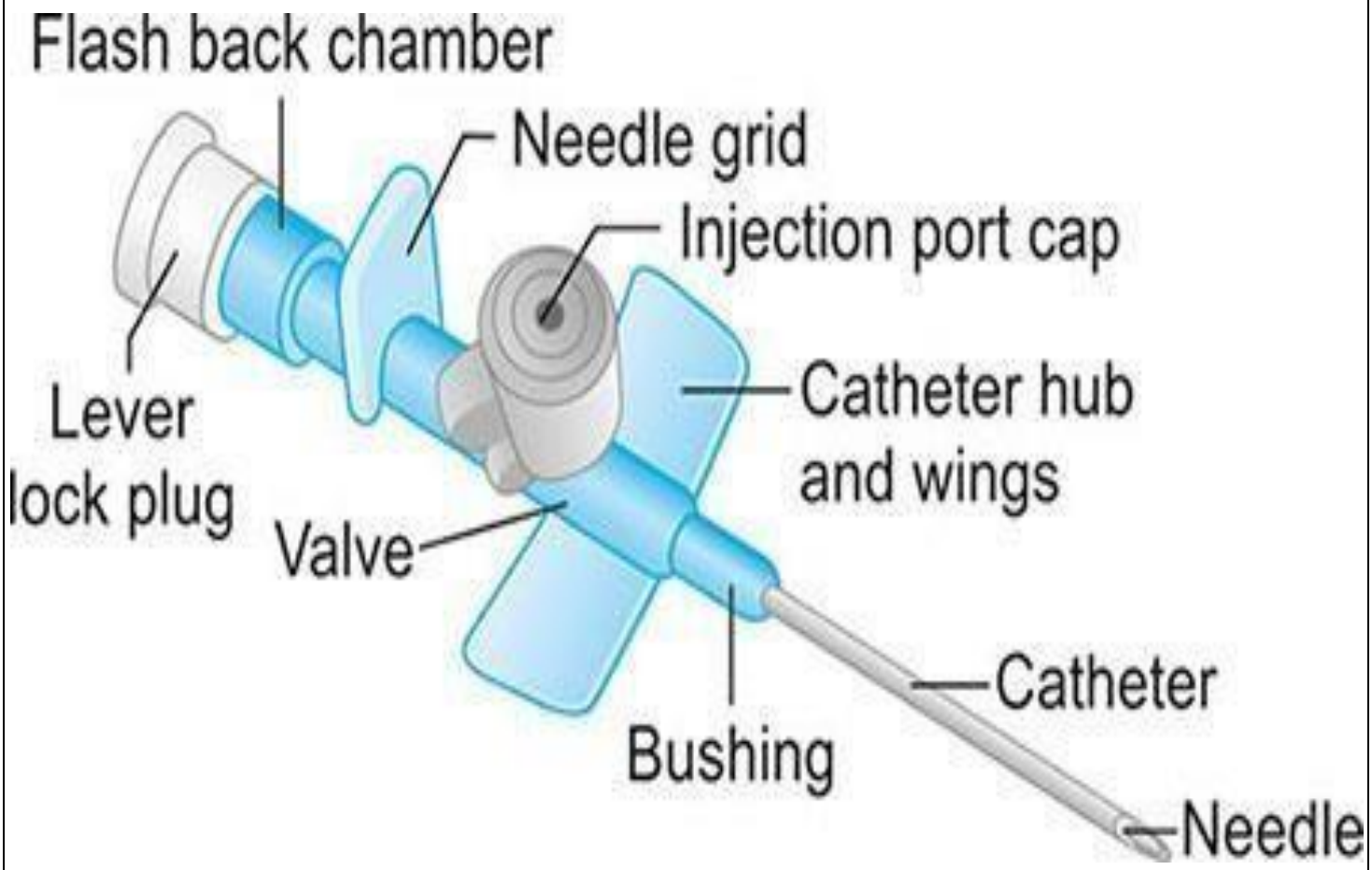
4-one-way valve

5-injection port with its cap

6-needle grip

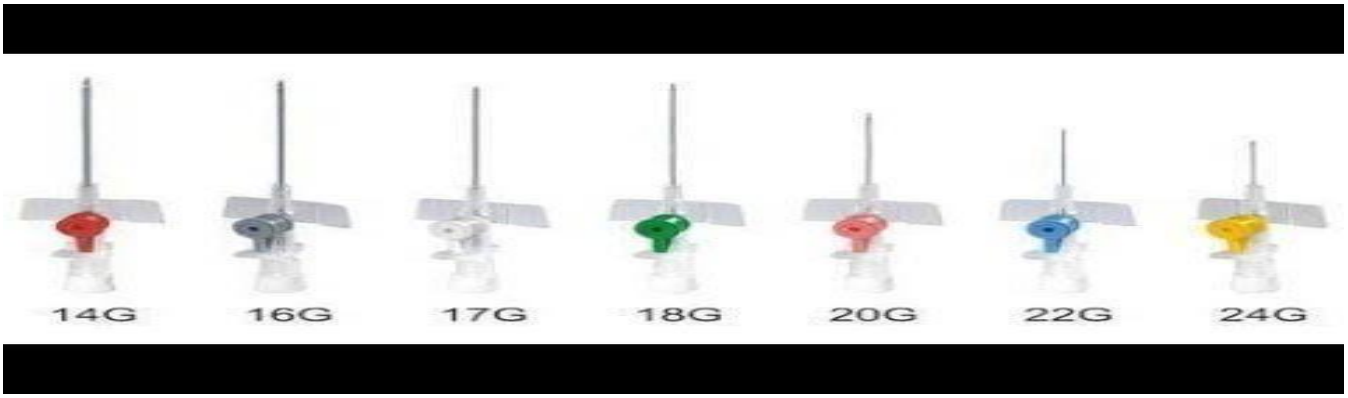
7-flash back chamber

8- lever lock plug


Flash back chamber
Needle grid
Injection port cap
Lever
lock plug
Catheter hub
and wings
Valve
Catheter
Bushing
Needle

Sizes and colour code and flow rate of I.V cannula

COLOR CODE	GAUGE	EXT. DIA. mm	LENGTH mm	FLOW RATE mL/min
ORANGE 	14G	2.1 mm	45 mm	240 mL/min (1 liter ± 4 menit) 
GREY 	16G	1.8 mm	45 mm	180 mL/min (1 liter ± 5.5 menit)
GREEN 	18G	1.3 mm	32 / 45 mm	90 mL/min (1 liter ± 11 menit) 
PINK 	20G	1.1 mm	32 mm	60 mL/min (1 liter ± 17 menit) 
BLUE 	22G	0.9 mm	25 mm	36 mL/min (1 liter ± 28 menit) 
YELLOW 	24G	0.7 mm	19 mm	20 mL/min (1 liter ± 50 menit)
VIOLET 	26G	0.6 mm	19 mm	13 mL/min (1 liter ± 77 menit) 



Equipment: -

-gloves

-alcohol pad

-IV dress

-2 size cannula

-tourniquet.

- Syringe with ٥ ml flush normal saline.

-gauze

-safety box

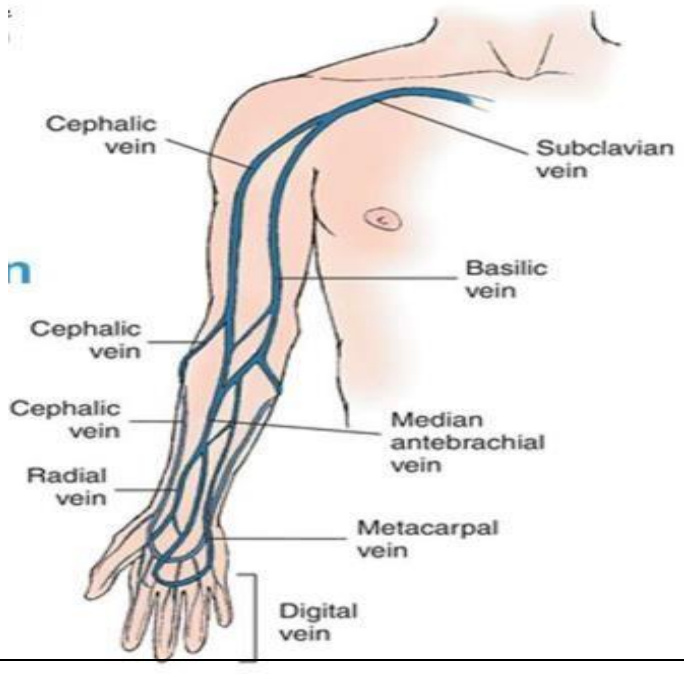
Cannulation: - is a technique in which cannula inserted into vessels. peripheral intravenous cannula: inserted into veins.

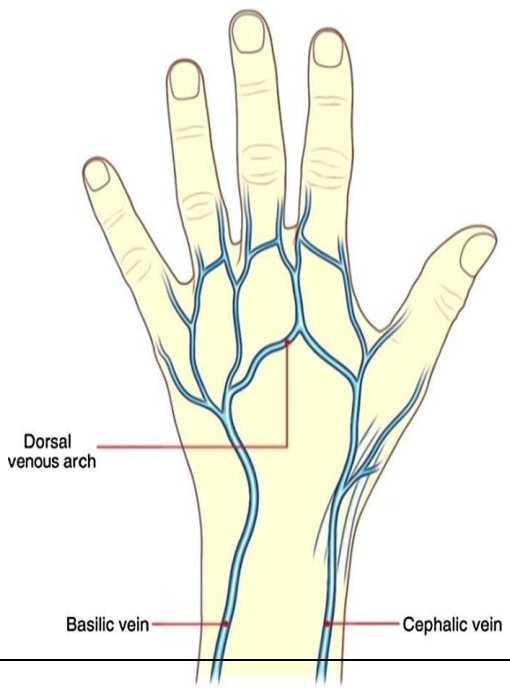
Arterial cannula: inserted into arteries and it is used for invasive blood pressure monitoring and arterial blood samplings NOT for drugs administration. . Most common radial artery.

Insertion technique

1-Prepare the patient: Explain the procedure to the patient and take informed consent. Consider using local anesthesia.

2-Select site of venous cannulation: Commonly used positions for venous cannulation are **, cephalic vein, subclavian vein, Basilic vein, median antebracheal vein, Radial vein, Metacarpal vein,digital vein, dorsal vein.**





3- Apply a tourniquet proximally and Look for a straight, wide, “spongy” vein,with no evidence of valves.

4- Clean the site of venous cannulation with alcohol antisepticand allowit to dry before cannulation.

5- Stretch the skin overlying the vein with non-dominant handand insert cannula with your dominant hand.

6- With the bevel facing up, slide the cannula through the skin and intothe vein until flashback of blood is seen; this indicates that the needletip has penetrated the vein.

Advance the cannula a few millimeters further to ensure the catheter as well as needle tip enters the vein; withdraw the needleand advance the cannula inside the vein

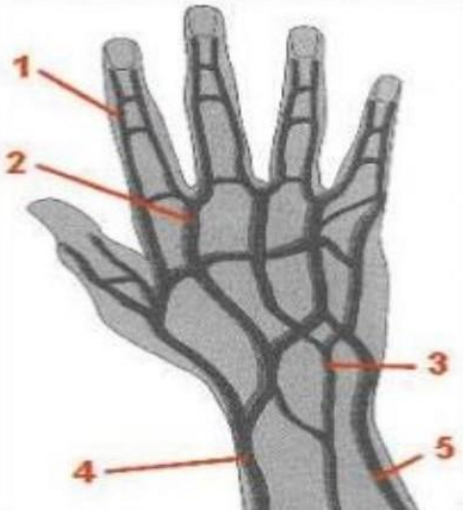
7-Apply digital pressure of left thumb over the catheter tip, removethe needle, and put the cover of cannula.

8-apply sterile and transparent dressing over the cannula with and write down date of cannulation over the dressing**.**

Sites of chosen vein of the upper extremities

- **Veins of the Hand**

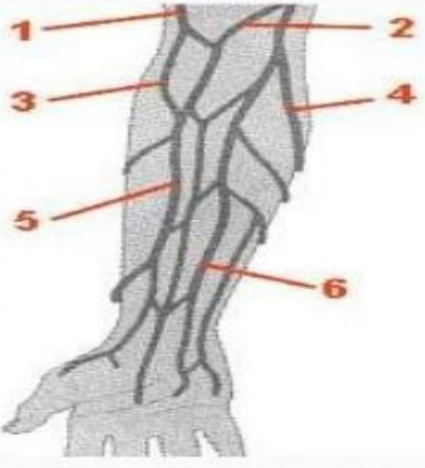
1. Digital Dorsal veins
2. Dorsal Metacarpal veins
3. Dorsal venous network
4. Cephalic vein
5. Basilic vein



Sites of chosen vein of the upper extremities

- **Veins of the Forearm**

1. Cephalic vein
2. Median Cubital vein
3. Accessory Cephalic Vein
4. Basilic vein
5. Cephalic vein
6. Median ante brachial vein



Problems and complications of cannulation

1- **Difficulty in finding vein , common problem especially in patients after multiple cannulation during prolonged hospitalization.**

2- **Hematoma at the site of cannulation.**

3- **Pain and induration**

4- **thrombophlebitis**

5- **Extravasation of fluids or drugs**

6- **Swelling around the site of venous cannulation due to extravasation of fluids or drugs.**

7- **Arterial puncture(rare)**

8- **Infection**

9- **Highly mobile vein: Seen in elderly population due to degradation of subcutaneous connective tissue; skin has be fixed tightly in these patients, to immobilize the vein, during cannulation.**







Note:

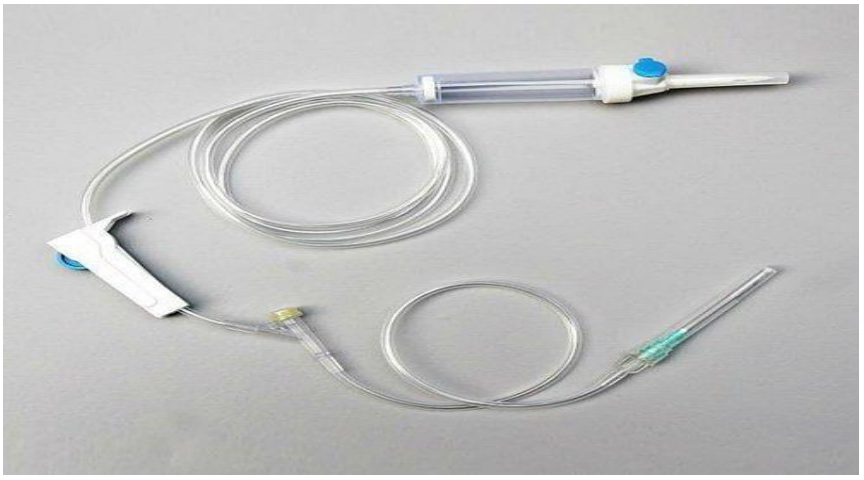
Intravenous cannula should be removed when no longer required, after 72–96 hours of insertion, or if there are anysigns of phlebitis or infiltration or extravasation.

Giving sets

In modern day medical practice, intravenous1 (IV) giving setsare regularly used to provide fluid therapy, to administer medicines, and blood products (e.g., blood & platelets). This practice is called infusion therapy. Most sets work by using gravity, often called gravity infusion.

Types of giving sets:

1-A Crystalloid giving set (basic IV giving sets)



2-A colloid giving sets (blood components)



This contains a 170-200 micron filter net to remove debris from blood components

• Debris is derived from WBC's and platelets which are no longer functional and also from cold insoluble protein and occasionally small clots.

Note: The infusion rate for macro drip sets (crystalloid and colloid) varies, typically being 10, 15, or 20 drops per ml, depending on the manufacturer.

3 Burette giving sets (microdrips)



Deliver 60 drops per ml Allows closer monitoring of fluid andelectrolytes.

Thank you