INTRAVENOUS THERAPY

- **Intravenous therapy** refers to infusion of fluid, directly into the venous circulation of patient through a venous cannula. Utmost sterile precautions are taken while setting up this procedure.
- **Intravenous (iv) therapy** is the insertion of a needle or catheter/cannula into a vein, based on the physician's written prescription.
- The needle or catheter / cannula is attached to a sterile tubing and a fluid container to provide medication and fluids.
- **Drip rate** can be calculated by presuming there are approximately 16 drops in 1 mL of crystalloid fluid. This quantity may vary between 12 drops to 22 drops. In micro drip sets, the number of drops may vary from 45 to 60 drops in 1 ml.
- Number of drops in 1 ml, is also called as **DROP FACTOR**.

INDICATIONS FOR INTRAVENOUS THERAPY:

- Replacement of electrolytes
- Restoration of blood volume
- Parenteral nutrition before and after surgery to maintain the fluid and electrolyte balance.
- Administration of drugs (antimicrobials, central nervous system drugs, cardiovascular drug, anticancer drugs, and many other agents).
- Keep a vein open for quick access

INTRAVENOUS DRIP SETTING GENERAL INSTRUCTIONS

- **Aseptic precautions**-cleanliness of equipment and material.
- **Proper waste disposal** at all stages including used containers, cotton swabs, packing materials, waste papers, equipment, etc.
- **Confirm** right patient, right drug, and right procedure.
- **Double check** the prescription/order on the patient's chart.
- **Confirm** that the patient is not allergic to the medications you are going to inject.
- **Check and verify** your calculations of the dose, drip rate, and number of drops to be adjusted per minute.
- **Check and confirm**-expiry date, the contents, and the strength mentioned on the fluid bag.
- **Confirm** that the IV set is clean and within the date of use.
- **Confirm** that the fluid bag is not damaged or leaking, and the solution in the fluid bag looks clean, clear, without any suspended or particulate matter, precipitate, cloudiness or bubbles.
- **Hang the IV bag** at least 3 feet above an adult patient's heart to ensure there is enough pressure to keep the IV running at a constant rate.
- **The drip chamber** must always be half full. If the drip chamber is too full, we will not be able to see the drops to count them, and so we will be unable to determine the rate at which the IV is infusing. If the drip chamber is not full enough, then this will allow air to get into the IV tubing, which means that air would get into the patient's circulatory system, which leads to air embolism.
- **Transfusion bottles** are in inverted position during use, it is likely that microparticles in the infusion may settle down. Therefore, the last portion of the fluid (around 40-50 ml) should be discarded.

- The chances of **local thrombophlebitis** increase with duration of the infusion therefore, it is advisable to change the site of infusion after 24 hrs.

PRECAUTIONS ABOUT DRUG ADMINISTRATION

Sometime drugs when mixed with each other in a syringe or infusion bottle may inactivate each other or may get precipitated or may lose potency or may have pH incompatibility. This is called an in vitro drug interaction (outside the body) or **'Pharmaceutical drug interaction.'** So, it is necessary to rule out such interaction while adding substances in syringes or bottles or intravenous infusions.

1. DO NOT MIX THE FOLLOWING DRUGS IN A SYRINGE OR IN INTRAVENOUS INFUSION:

- Phenytoin and 5% dextrose (For phenytoin, normal saline is preferred)
- Beta lactam antibiotics and Tetracyclines/Macrolides/Chloramphenicol
- Heparin and Hydrocortisone/Penicillins/Aminoglycosides
- Hydrocortisone and Penicillin/Aminoglycosides
- Norepinephrine and Sodium bicarbonate (For norepinephrine, epinephrine & dopamine -dextrose is preferred)
- Thiopental and Succinylcholine/Pancuronium/Atracurium/ketamine/Morphine

2. Drugs should not be added to blood and blood products.

3. Sodium nitroprusside infusion bottle and set should be covered with aluminium foil or colored black paper, as nitroprusside is degraded by light.

4. Amphotericin B is always used in 5% dextrose, because it precipitates with electrolytes.

5. Do not use PVC tubing for Glyceryl Trinitrate, Paraldehyde, and Paclitaxel.

6. When you want to add any drug to an infusion, if it is a preformed formulation, open it fresh just before adding. If it needs to be prepared, then prepare it fresh just before use. Do not keep the drug open or prepared for long time before actually adding it.