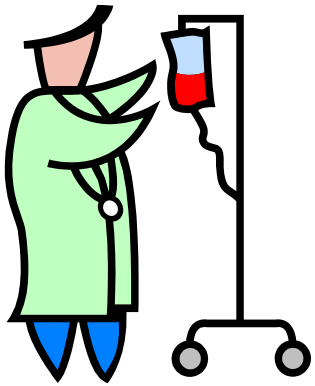
Fluid Therapy



Assist Prof Luay Ahmed Naeem

- Fluid Therapy

  is the administration of fluids to a patient as a treatment or preventative measure. It can be administered via an intravenous, intraperitoneal, intraosseous, subcutaneous and oral routes. 60% of total bodyweight is accounted for by the total body water.

Basics of Body Fluid:

- An adult animal contains about 60% fluid of its body weight.
- **Intracellular fluid (ICF)** consists of about two-thirds of total body fluids.
- The **extracellular fluid (ECF)** which constitutes about one-third of the total body fluids. It is divided into three sub compartments—interstitial, intravascular, and trans cellular. The interstitial contains three-quarters of all the fluid in the extracellular space.
- The intravascular contains the fluid, mostly plasma, that is within the blood vessels. Total blood volume is roughly 8% of bodyweight and plasma roughly 5% of bodyweight

Why Give Fluids During Surgery?

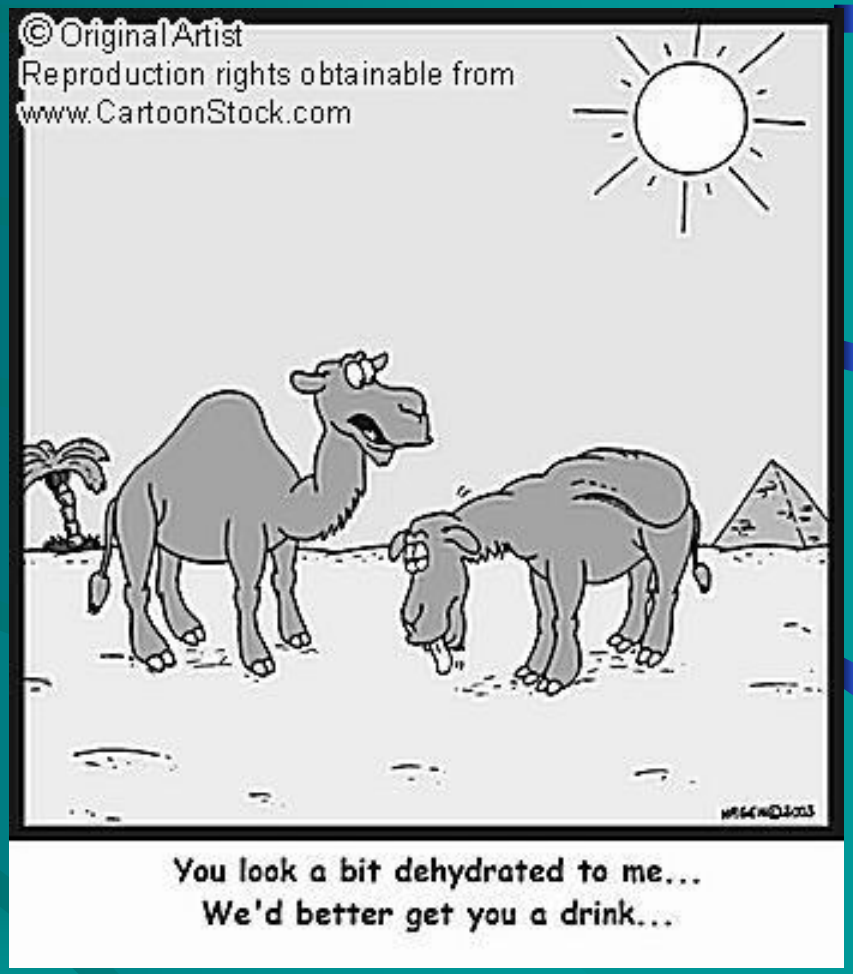
- Number one reason:
- Prevent **hypotension**:
  - Vasodilation (what drug?)
  - Decreased cardiovascular function (inj? inh?)
  - Blood loss
  - Fluid losses
- Maintenance during surgery **10 ml/kg/hr**

Why Give Fluids At Other Times?

- Correct dehydration
- Correct acid-base abnormalities
- Correct electrolyte abnormalities
- Deliver drugs in a constant-rate infusion
- Prevent dehydration (GI disease)
- Diuresis (renal disease, toxicities)

Signs of Dehydration

- <5%
- No clinical signs



Signs of Dehydration

- 5-6% = “mild dehydration”:
- **Tacky mucous membranes**
- Slight skin tint

Signs of Dehydration

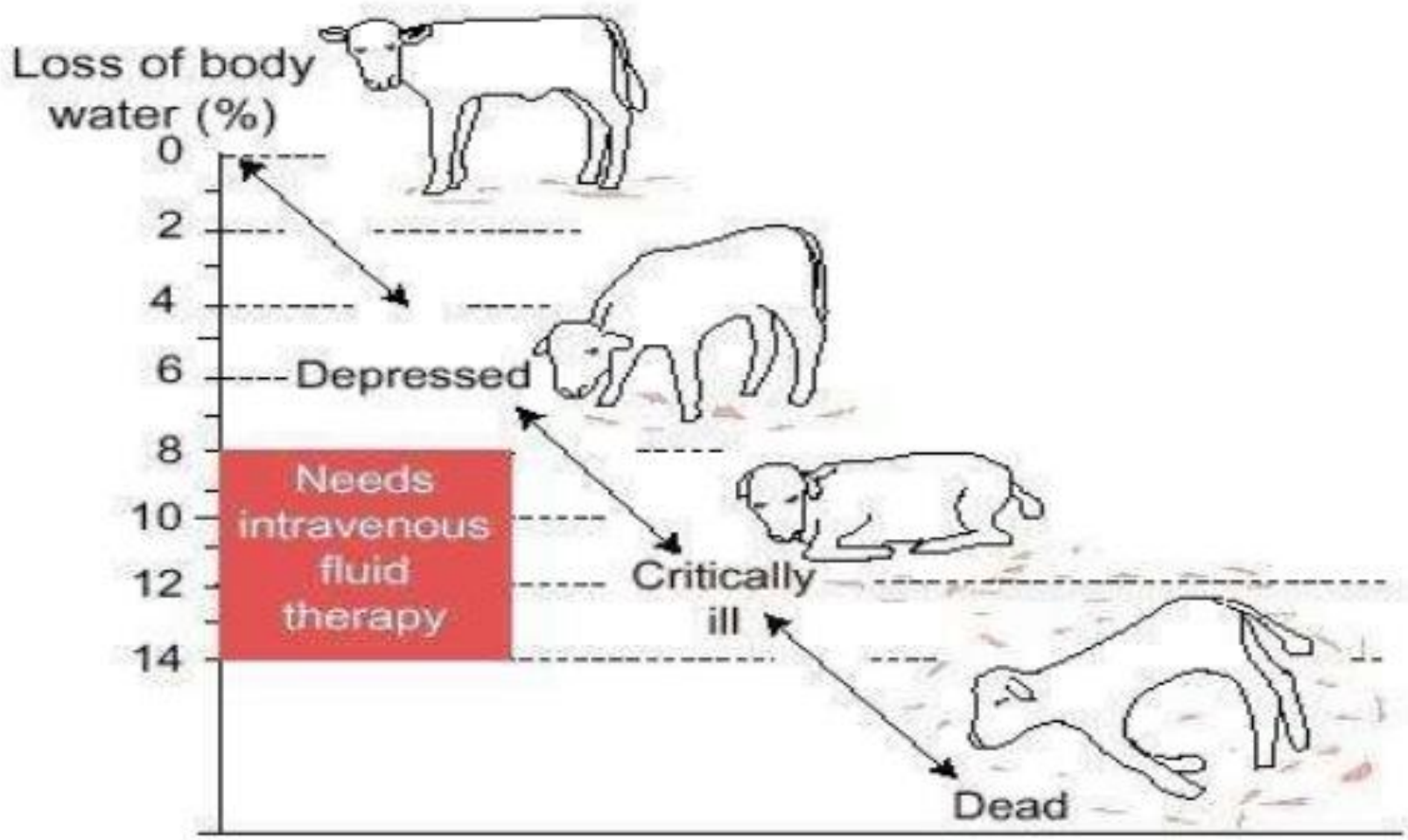
- 7-8% = “moderate dehydration”
- Dry mucous membranes
- Skin tint
- CRT 2-3 sec
- Slight depression of eyes into sockets

Signs of Dehydration

- 10-12% = “severe dehydration”
- Severe skin tint
- CRT >3 sec
- Markedly sunken eyeballs
- Cold extremities
- +/- shock

Signs of Dehydration

- 12-15% obvious shock, imminent death.


Loss of body water (%)
0
2
4
6
8
10
12
14
Depressed
Needs intravenous fluid therapy
Critically ill
Dead

Administration Routes

- Oral
  - If the stomach works, use it!
  - Safest route ***if tolerated***

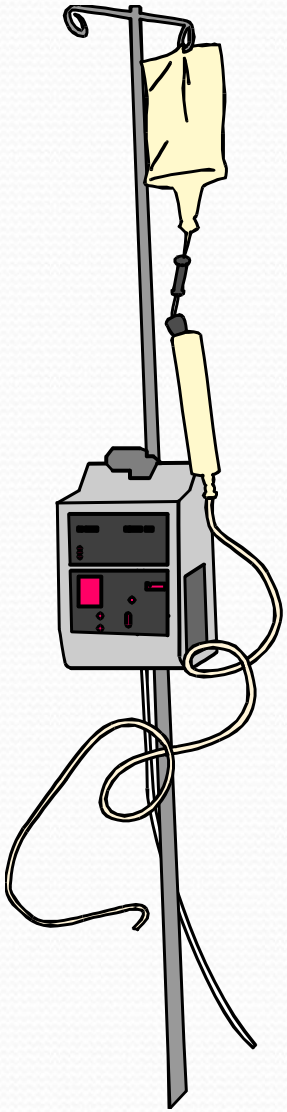
Administration Routes

- Subcutaneous
  - Works well in most animal
  - Sometimes need to use multiple sites
  - Can't add glucose, large quantity KCl, or some drugs
  - No MICRO drip for SQ

INTRAOSSEOUS

- If situation is dire and no vein accessible
- Into the medullary (bone marrow) cavity of long bones
  - Femur or Humerus are commonly used
- Used frequently in birds

Administration Routes



- Intravenous
  - **Best route in dehydrated animals**
  - Possible problems:
    - Volume overload
    - Catheter reactions (swelling, fever)
  - 24-hour maintenance

Type and Indications of IV Therapy

Objective

- Define intravenous therapy .
- List the indications of IV therapy .
- Differentiate between the types of IV solutions.
- Discuss the categories of IV solution according to their purpose
- List the IV infusion methods.

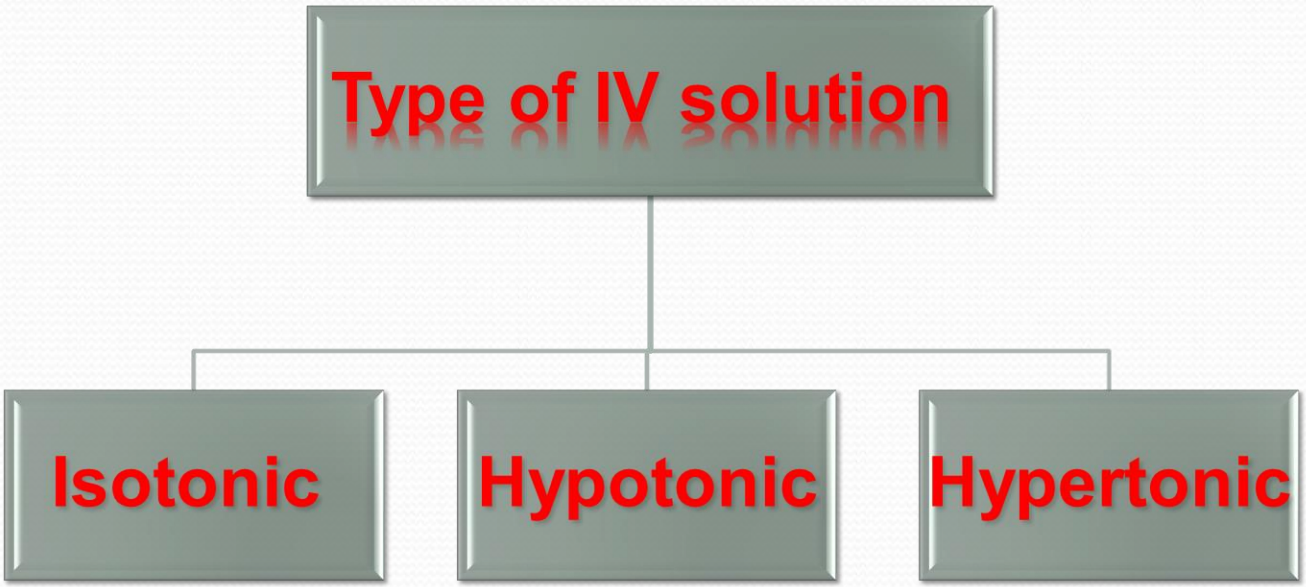
Definition of IV therapy

It is an effective and efficient method of supplying fluid directly into intravenous fluid compartment producing rapid effect with availability of injecting large volume of fluid more than other method of administration.

Indication of IV therapy

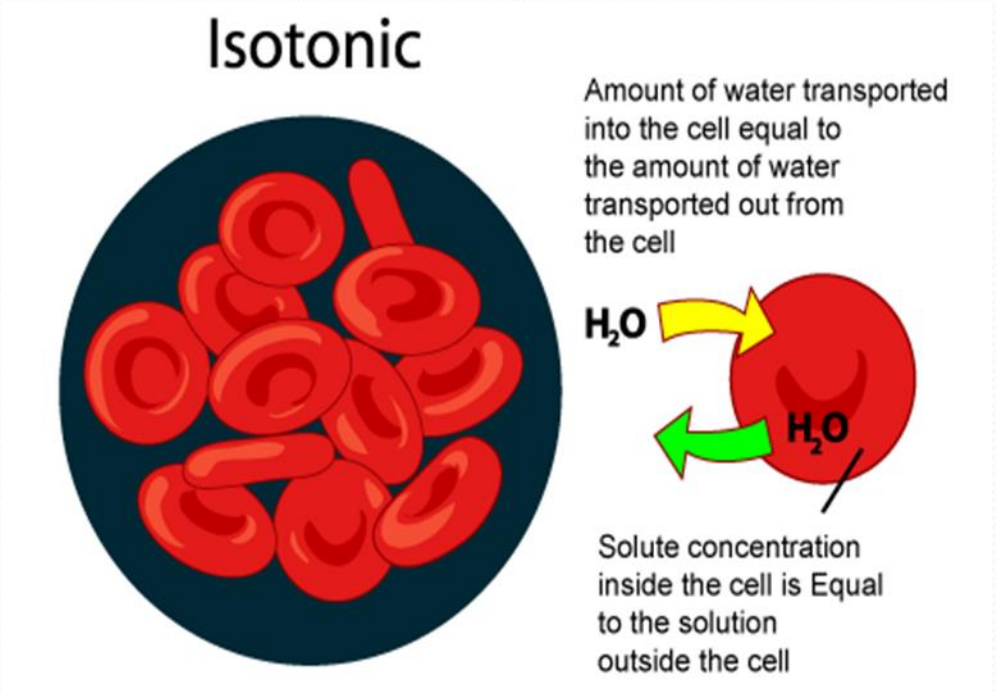
- Maintain or replace body store .
- Restore acid abase balance
- Restore the volume of blood component
- Administer of medication
- Provide Nutrition
- Monitor CVP (central venous pressure)

Type of IV solution



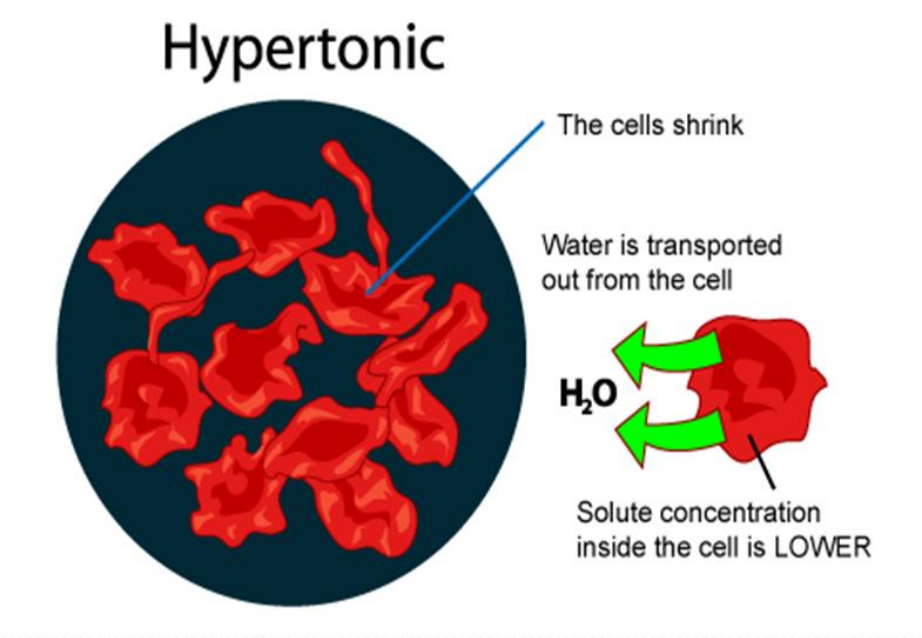
Isotonic solution

- A solution that has the same salt concentration as the normal cells of the body and the blood.
- Ex:
- 1- 0.9% NaCl .
- 2- Ringer Lactate .
- 3- Blood Component .
- 4- D5W.



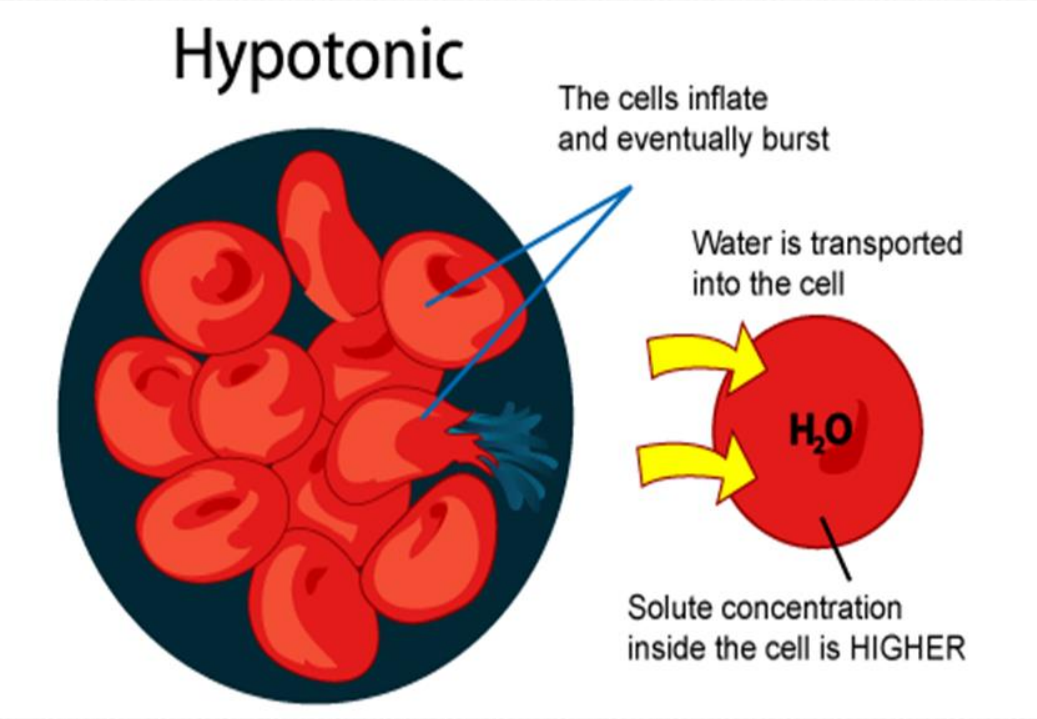
Hypertonic solution

- A solution with a higher salts concentration than in normal cells of the body and the blood.
- Ex:
- 1- D5W in normal Saline solution .
- 2-D5W in half normal Saline .
- 3- D10W.



Hypotonic solution

- A solution with a lower salts concentration than in normal cells of the body and the blood.
- EX:
- 1-0.45% NaCl .
- 2- 0.33% NaCl .



Categories of intravenous solutions according to their purpose

- Nutrient solutions.
- Electrolyte solutions.
- Volume expanders.

Nutrient solutions

- It contain some form of carbohydrate and water.
- Water is supplied for fluid requirements and carbohydrate for calories and energy.
- They are useful in preventing dehydration and ketosis but do not provide sufficient calories to promote wound healing, weight gain, or normal growth of children.
- Common nutrient solutions are D5W and dextrose in half-strength saline.

Electrolyte solutions (Crystalloid)

- Fluids that consist of water and dissolved crystals, such as salts and sugar.
- Used as maintenance fluids to correct body fluids and electrolyte deficit .
- Commonly used solutions are:

➢ -Normal saline (0.9% sodium chloride solution).

➢ -Ringer's solutions (which contain sodium, chloride, potassium, and calcium).

➢ -Lactated ringer's solutions (which contain sodium, chloride, potassium ,calcium and lactate) .

Volume expanders (Colloid)

- Are used to increase the blood volume following severe loss of blood (haemorrhage) or loss of plasma (severe burns).
- Expanders present in dextran, plasma, and albumin.

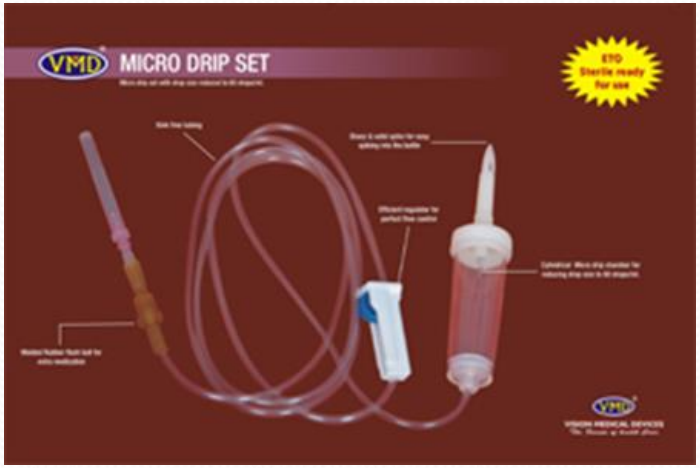
Parenteral Nutrition (PN)

- Parenteral nutrition is a form of nutritional support that supplies protein, carbohydrate, fat, electrolytes , vitamins, minerals, and fluids via the IV route to meet the metabolic functioning of the body.

Equipment of I.V. therapy

- I. Solution containers.

- II. I.V. administration sets.



Thank you for listening