Lecture 10

Subject

Parenteral Fluid Therapy

Theoretical

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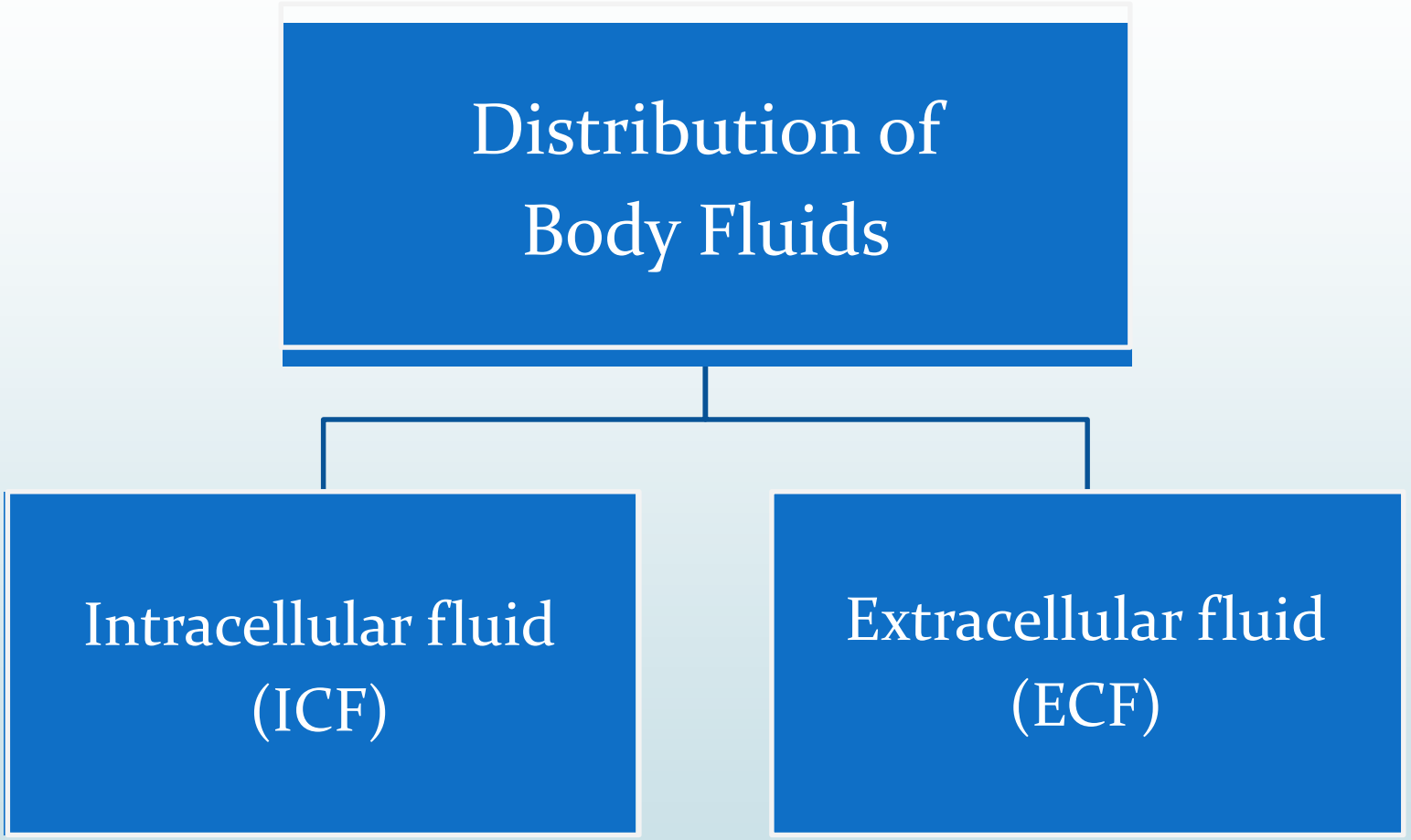
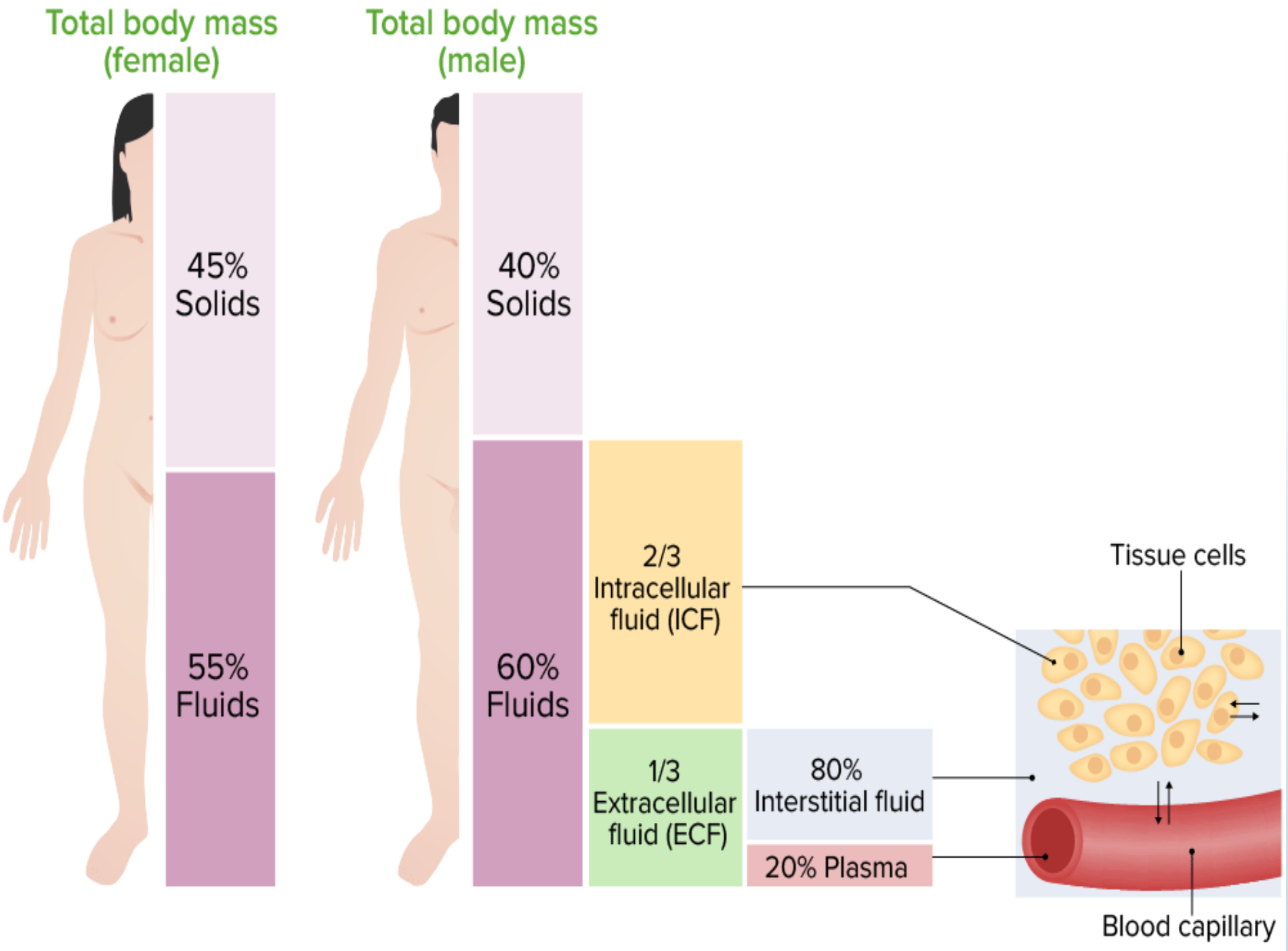
- Intravenous therapy is administration of liquid substances directly into a vein and the general circulation through venipuncture.
- is an effective and efficient method of supplying fluid directly into intravenous fluid compartment producing rapid effect, with availability of injecting large volume of fluid more than other method of administration.


Distribution of Body Fluids
Intracellular fluid (ICF)
Extracellular fluid (ECF)


Total body mass (female)
45% Solids
55% Fluids
Total body mass (male)
40% Solids
60% Fluids
2/3 Intracellular fluid (ICF)
1/3 Extracellular fluid (ECF)
80% Interstitial fluid
20% Plasma
Tissue cells
Blood capillary

Types of Fluids

Isotonic

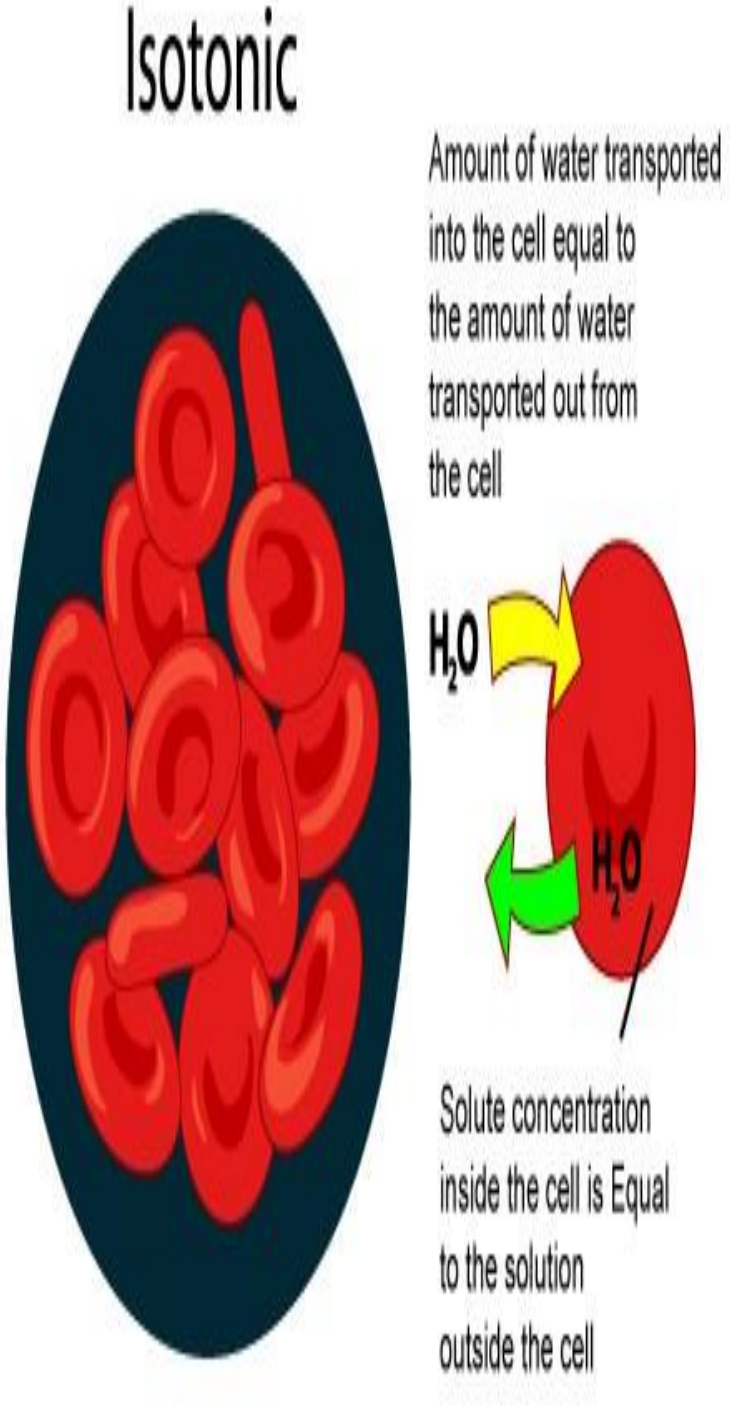
A solution that has the same salt concentration as the normal cells of the body and the blood.

Ex:

1- 0.9% NaCl (Metabolic alkalosis, Hyponatremia, Shock, Resuscitation)

2- Ringer Lactate (Dehydration, Burns, GI tract fluid loss, Acute blood loss, Hypovolemia)

3- D5W (Fluid loss, dehydration, Hypernatremia)




0.9% Sodium Chloride Intravenous Infusion B.P.
NaCl 0.9%
500ml
B BRAUN


RINGER LACTATE
shutterstock


D5W

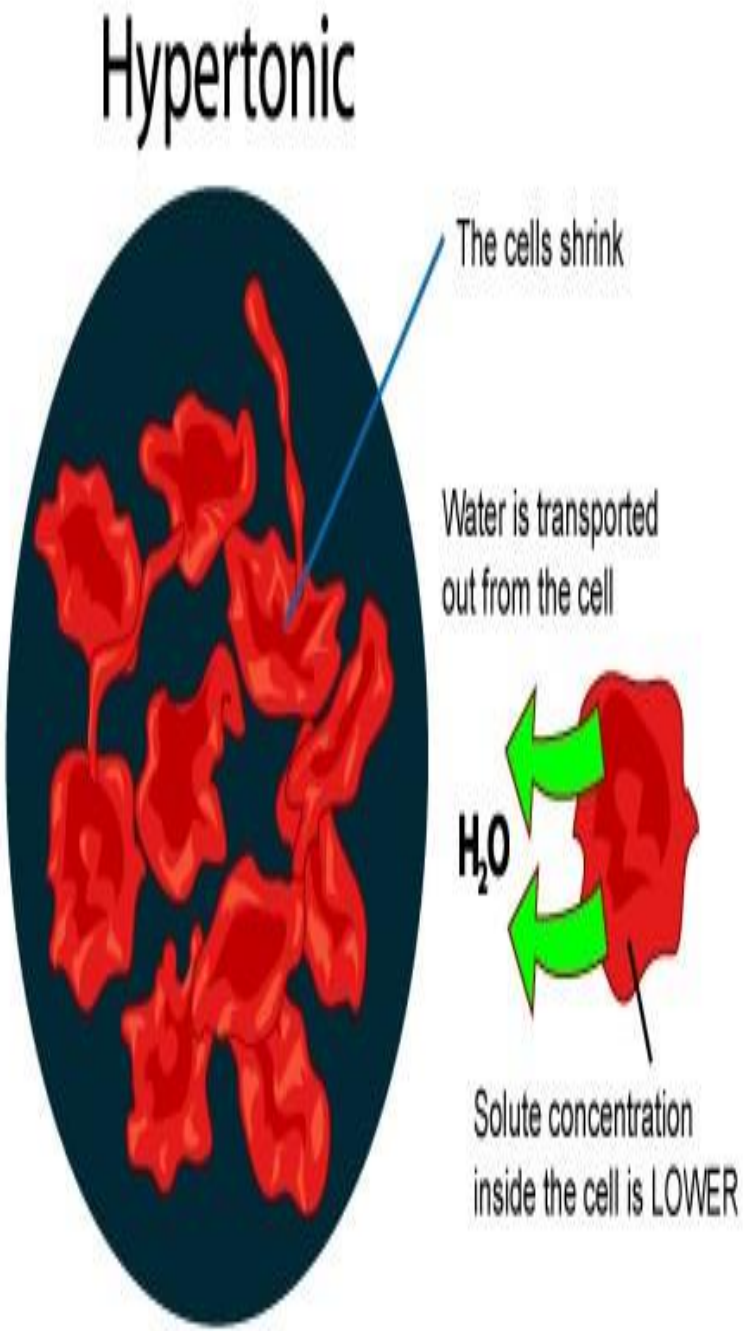
Hypertonic

A solution with a higher salts concentration than in normal cells of the body and the blood

EX:

1- 5%Dextrose in 0.9% Nacl (D5NS): (Heat related disorders, Peritonitis)

2- 5%Dextrose in Lactated Ringers' (D5LR): (Hypovolemic shock, Hemorrhagic shock)




0.9% Sodium Chloride Intravenous
And 5% Glucose Infusion B.P.
NaCl 0.9%
G-5%
Each 100 ml contains:
Sodium Chloride 0.90 g
Glucose Monohydrate for Parenteral Use 5.50 g
Water for Injections to 100 ml
100 ml ≙ 85 kJ ≙ 20 kcal
Osmolarity: 585 mOsm/l
Electrolytes: mmol/l
Na+ 154
Cl- 154
Dosage:
Average dose: 1000 ml/day
Flow rate:
120-180 drops/min
≙ 360-540 ml/h
500 ml
Manuf. date:
LOT
EXP:
Single dose container
Discard unused portion
Sterile, non-pyrogenic
Caution:
Not to be used if container is found leaking or solution is not clear.
Keep medicine out of reach of children.
Do not store above 30 °C.
Reg. no.: SIN 6430 P
See Directions for Use inside carton
4 030539 906494
B BRAUN
Manufactured by:
B. Braun Medical Industries S/B
11900 Bayan Lepas, Penang, Malaysia.
G-5%
NaCl 0.9%


5% DEXTROSE IN LACTATED RINGER'S
SOLUTION FOR INTRAVENOUS INFUSION
Rx
Batch No.: 13022111
Mfg. Date: 2013-02
Exp. Date: 2016-01
5% DEXTROSE IN LACTATED RINGER'S
SOLUTION FOR INTRAVENOUS INFUSION

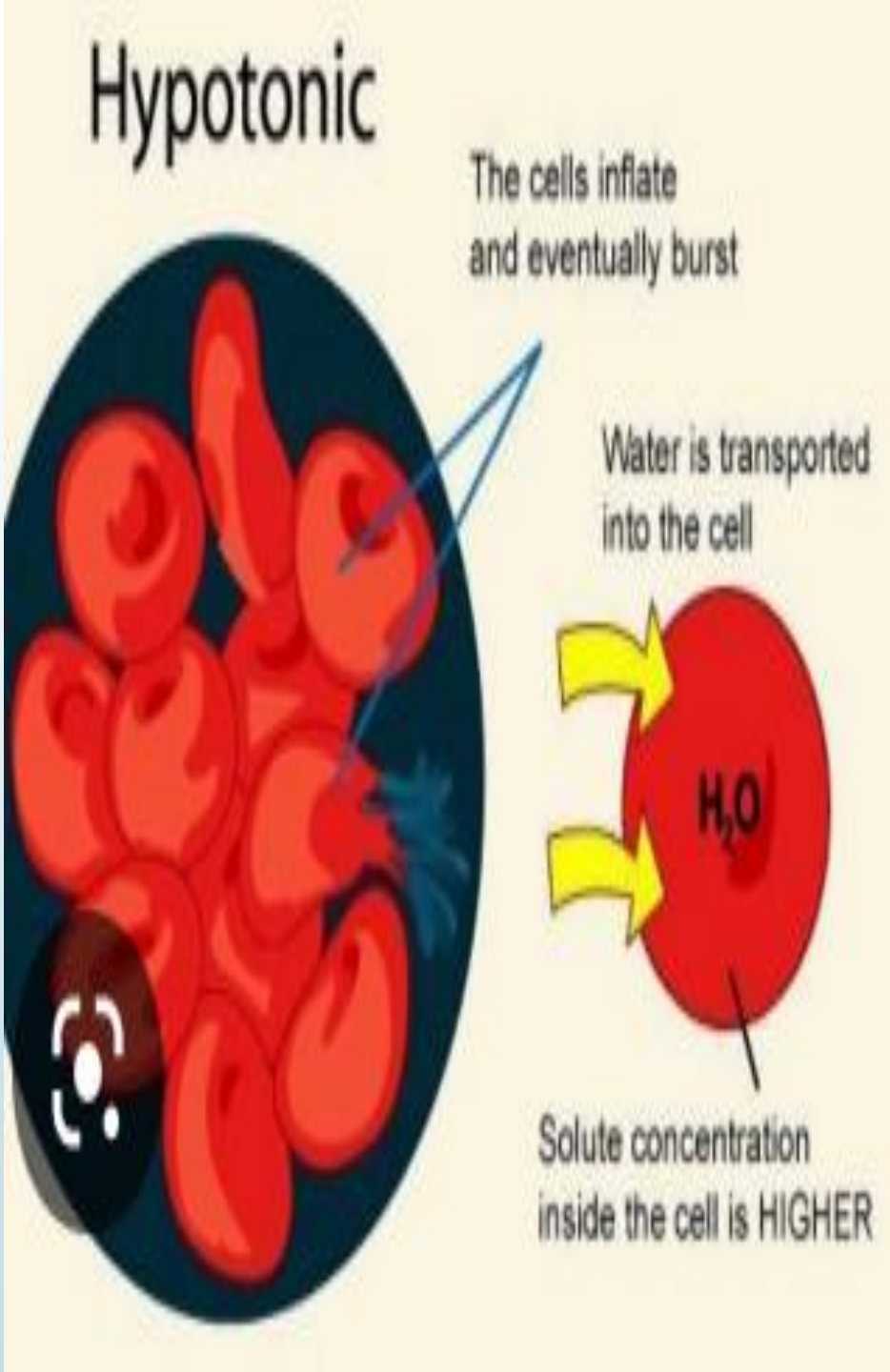
Hypotonic

A solution with a lower salts concentration than in normal cells of the body and the blood.

Ex:
1-D5W in half normal Saline .
2- D10W.

uses

1- Treatment of hypertonic dehydration.
2- Gastric fluid loss
3- Cellular dehydration from excessive diuresis
4- Slow rehydration




LOTW4124B2 EXPDEC15
JB0163 500 mL DIN 00060384
10% Dextrose Injection USP
Dextrose à 10% USP, injectable
D10W
HYPERTONIC / HYPERTONIQUE
APPROX mOsmol/L - 505 pH 4.0
INTRAVENOUS FLUID AND NUTRIENT REPLENISHMENT / RECHARGE LIQUIDIENNE ET NUTRIMENT PAR INJECTION INTRAVEINEUSE
PER 100 mL DEXTROSE HYDROUS USP - 10 g / WATER FOR INJECTION USP - qs
PAR 100 mL DEXTROSE HYDRATE USP - 10 g / EAU POUR INJECTION USP - qs
CAUTIONS SINGLE USE / DISCARD UNUSED PORTION / SQUEEZE AND INSPECT BAG / SEE DIRECTIONS FOR USE / MUST NOT BE USED IN SERIES CONNECTIONS / DO NOT ADMINISTER SIMULTANEOUSLY WITH BLOOD / STORE AT 15°C TO 25°C
ATTENTIONS USAGE UNIQUE / JETER PORTION INUTILISEE / PRESSER ET INSPECTER LE SAC / VOIR MODE D'EMPLOI / NE DOIT PAS ETRE MONTE EN SERIE / NE PAS ADMINISTRER SIMULTANEMENT AVEC LE SANG / GARDER ENTRE 15°C ET 25°C
NONPYROGENIC / STERILE / APYROGENE
VIAFLEX PVC CONTAINER / CONTENANT DE PVC
BAXTER AND VIAFLEX ARE TRADEMARKS OF BAXTER INTERNATIONAL INC
BAXTER ET VIAFLEX SONT DES MARQUES DE COMMERCE DE BAXTER INTERNATIONAL INC
Baxter
Baxter Corporation
Mississauga ON L5N 0C2
13
88-70-20-163


5% Dextrose and
0.45% Sodium Chloride
Injection USP
REF L6121
NDC 0264-7612-10
DIN 01927531
HK 22607
500 mL
EXCEL® CONTAINER
Each 100 mL contains: Hydrous Dextrose USP 5 g; Sodium Chloride USP 0.45 g; Water for Injection USP qs
pH: 4.4 (3.5–6.5); Calc. Osmolarity: 405 mOsmol/liter, hypertonic
Electrolytes (mEq/liter): Na+ 77; Cl− 77
Sterile, nonpyrogenic. Single dose container. Do not use in series connection. For intravenous use only. Use only if solution is clear and container and seals are intact.
WARNINGS: Some additives may be incompatible. Consult with pharmacist. When introducing additives, use aseptic techniques. Mix thoroughly. Do not store.
Recommended Storage: Room temperature (25°C). Avoid excessive heat. Protect from freezing. See Package Insert.
Do not remove overwrap until ready for use. After removing the overwrap, check for minute leaks by squeezing container firmly. If leaks are found, discard solution as sterility may be impaired.
Not made with natural rubber latex, PVC or DEHP.
Rx only
OTHER
-0-
-1-
-2-
-3-
-4-
Y94-0003-248 LD-113-3
EXCEL is a registered trademark of B. Braun Medical Inc.
B BRAUN
B. Braun Medical Inc.
Bethlehem, PA 18018-3524 USA
1-800-227-2862
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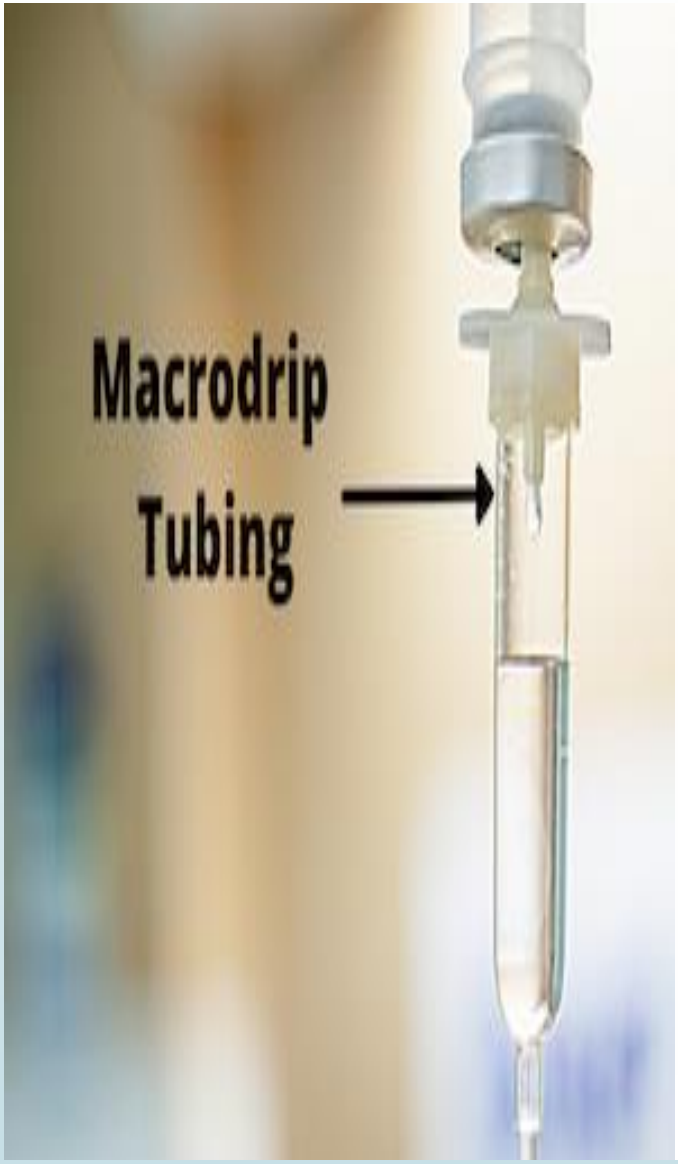
Types of infusion set



1- Macro drip

2- Micro drip

3- Blood set

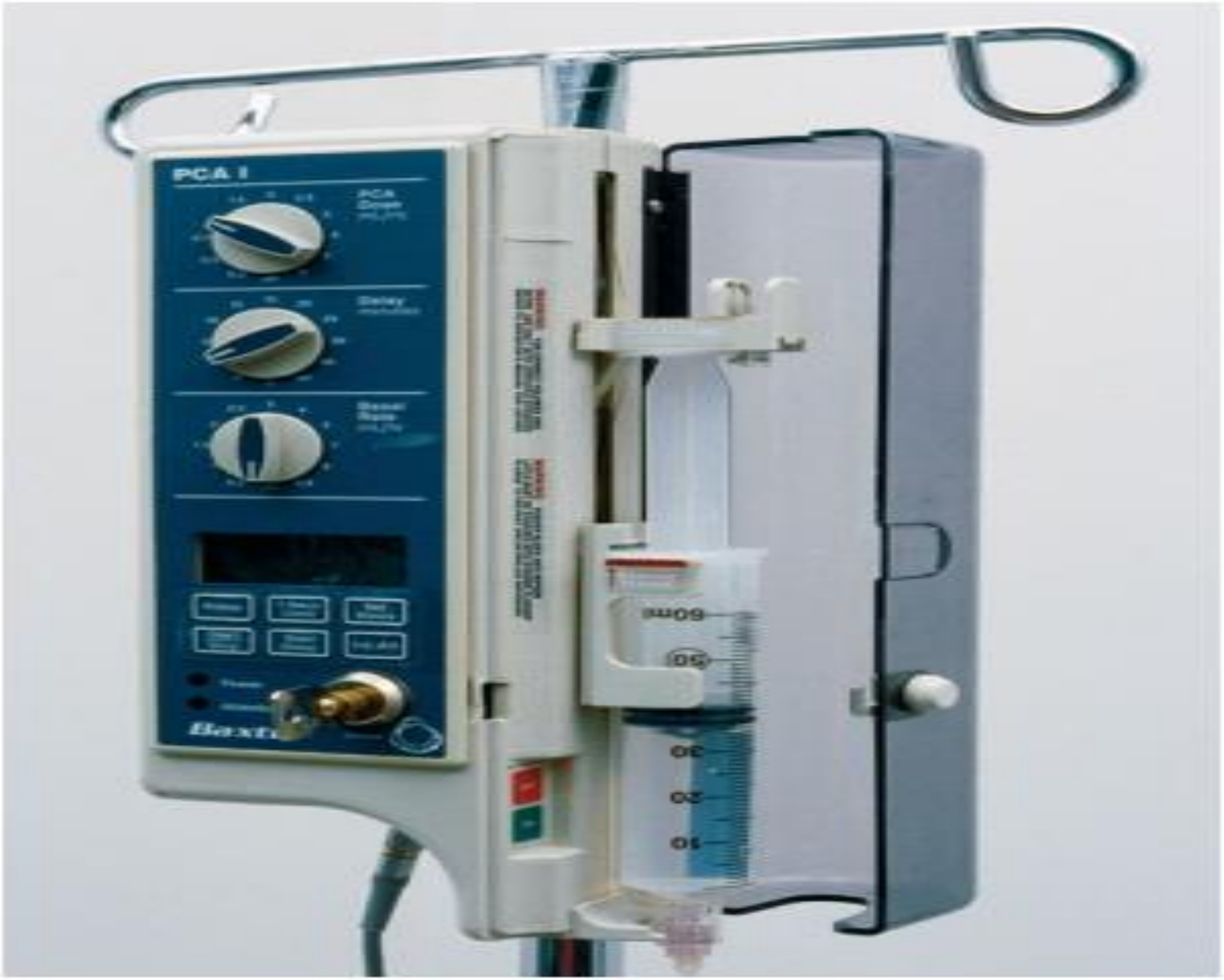


Figure 35–47 ■ Syringe pump or mini-infuser for administration of IV medications.

How to calculate IV flow rates !

What is a drop factor?

Drop factor is the number of drops in one milliliter used in IV fluid administration (also called drip factor). A number of different drop factors are available but the Commonest are:

1- Blood set: 10 drops/ml

2- Macrodrip: 15 drops / ml

3- Microdrip: 60 drops / ml

Drops per minute are calculated by the following formula:

$$\text{Drops per minute} = \frac{\text{Total infusion volume} \times \text{drop factor}}{\text{Total time of infusion in minutes}}$$

Nursing management

1- Verify prescription for IV therapy, check solution label and identify patient. Check for allergies

2. Explain procedure to patient.

3. Perform hand hygiene and put on disposable nonlatex gloves

4. Apply a tourniquet 4 to 6 inches above the site and identify a suitable vein.

5. Choose site, Choose IV cannula.

6. Prepare equipment by connecting infusion bag and tubing, run solution through tubing to displace air and cover end of tubing.
7. Position patient’s arm below heart level to encourage capillary filling.
8. Palpate for a pulse distal to the tourniquet. Ask patient to open and close fist several times.
9. Prepare site by scrubbing with povidone–iodine swabs for 2 to 3 minutes in circular motion, moving outward from injection site.

10. Holding needle bevel up and at 5- to 25-degree angle,
11. If backflow of blood is visible, straighten angle and advance needle.
12. Release tourniquet and attach infusion tubing; open clamp enough to allow drip.
13. Cover the insertion site with a transparent dressing bandage, or sterile gauze.

Complications

A- Infiltration:

1- Needle / cannula displacement.

2- Blood leak from IV site.

S\S (pain/redness/swelling/diminished flow rate)

B- Air Embolism:

1- Air in IV tubing (IV bag has emptied)

S\S (decreased or weak BP, rapid pulse and cyanosis).

C- Infection:

Note any signs of redness , pain , swelling hot to touch and yellow discharge

D- Circulatory (fluid) overload:

1- The cardiovascular system is unable to cope with the IV rate & volume.

2- The patient becomes pale , sweaty and short of breath.

S\S headache, dyspnea, raised BP, flushed skin, fluid imbalance(volume infused vs volume excreted).

E- Allergic reaction:

1- Note any known allergies & document

2- Observe for any reaction to IV additives e.g: IV antibiotics / blood products.