Body fluids :

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Learning objectives:

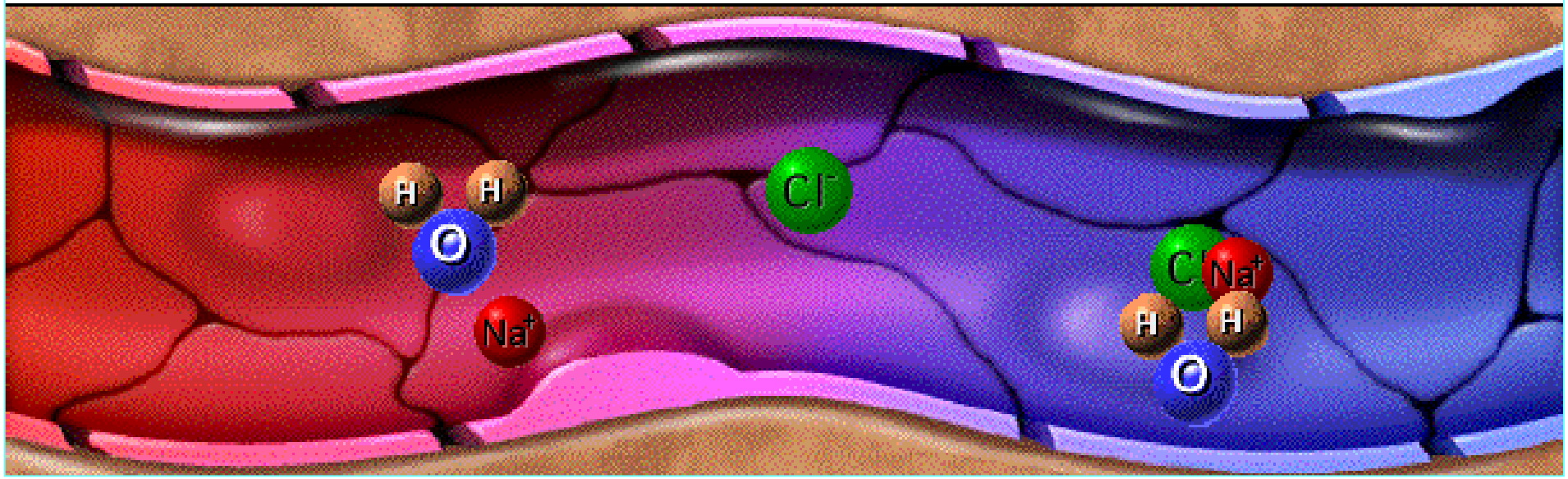
- Understand the Importance of Body Fluids
- Identify the Different Compartments of Body Fluids
- Describe the Composition of Body Fluids
- Explain Fluid and Electrolyte Balance Mechanisms
- Examine the Movement of Fluids Between Compartments

Overview:

- Body fluids are essential for maintaining homeostasis.
- They make up about 60% of total body weight in adults.
- Body fluids are categorized into two main compartments: intracellular and extracellular.

Roles of Water

- Temperature regulation
- Protective cushion
- Lubricant
- Reactant
- Solvent
- Transport

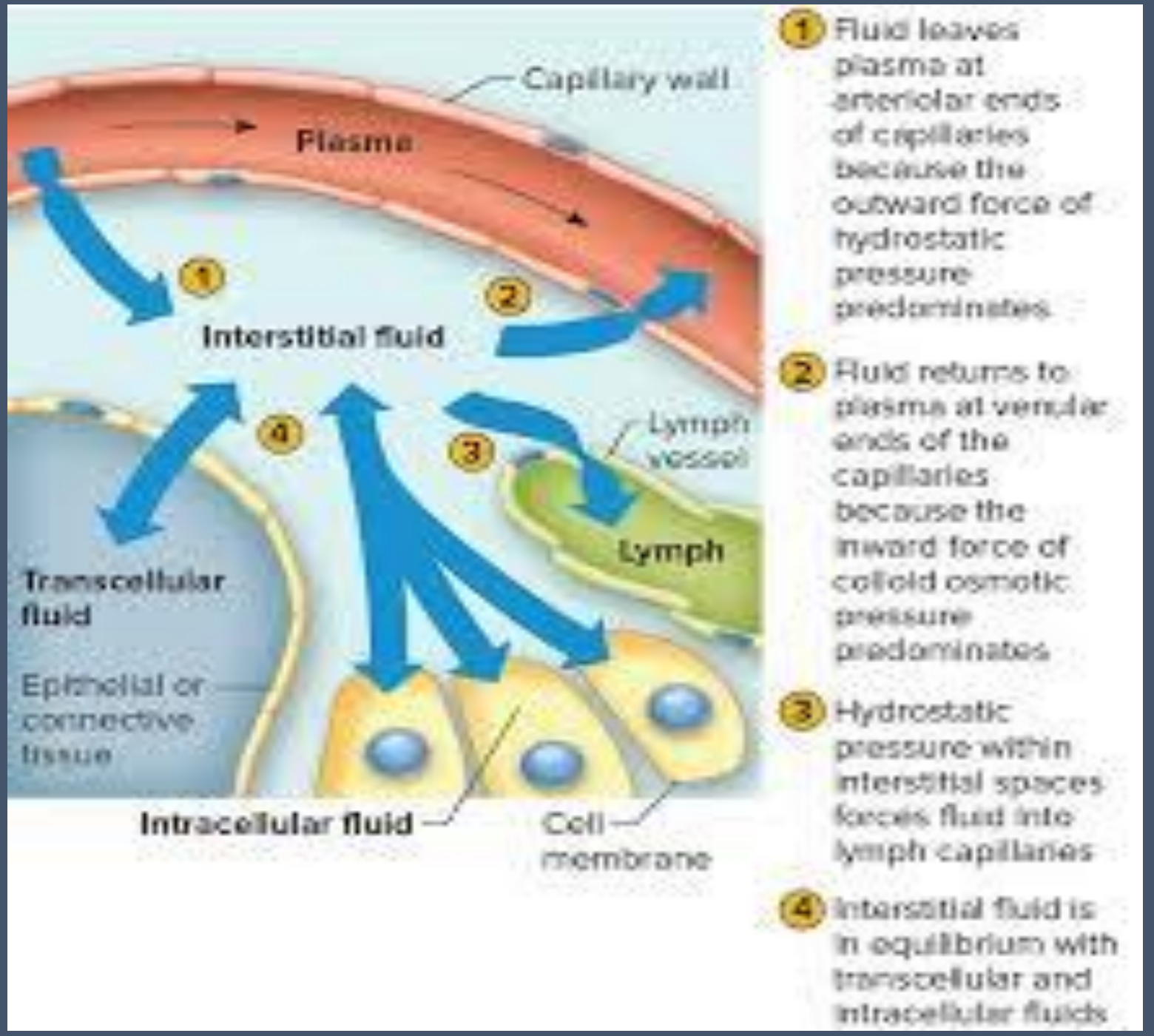


Barriers separate ICF, interstitial fluid and plasma

- Plasma membrane
    - Separates ICF from surrounding interstitial fluid
- Blood vessel wall
    - Separate interstitial fluid from plasma

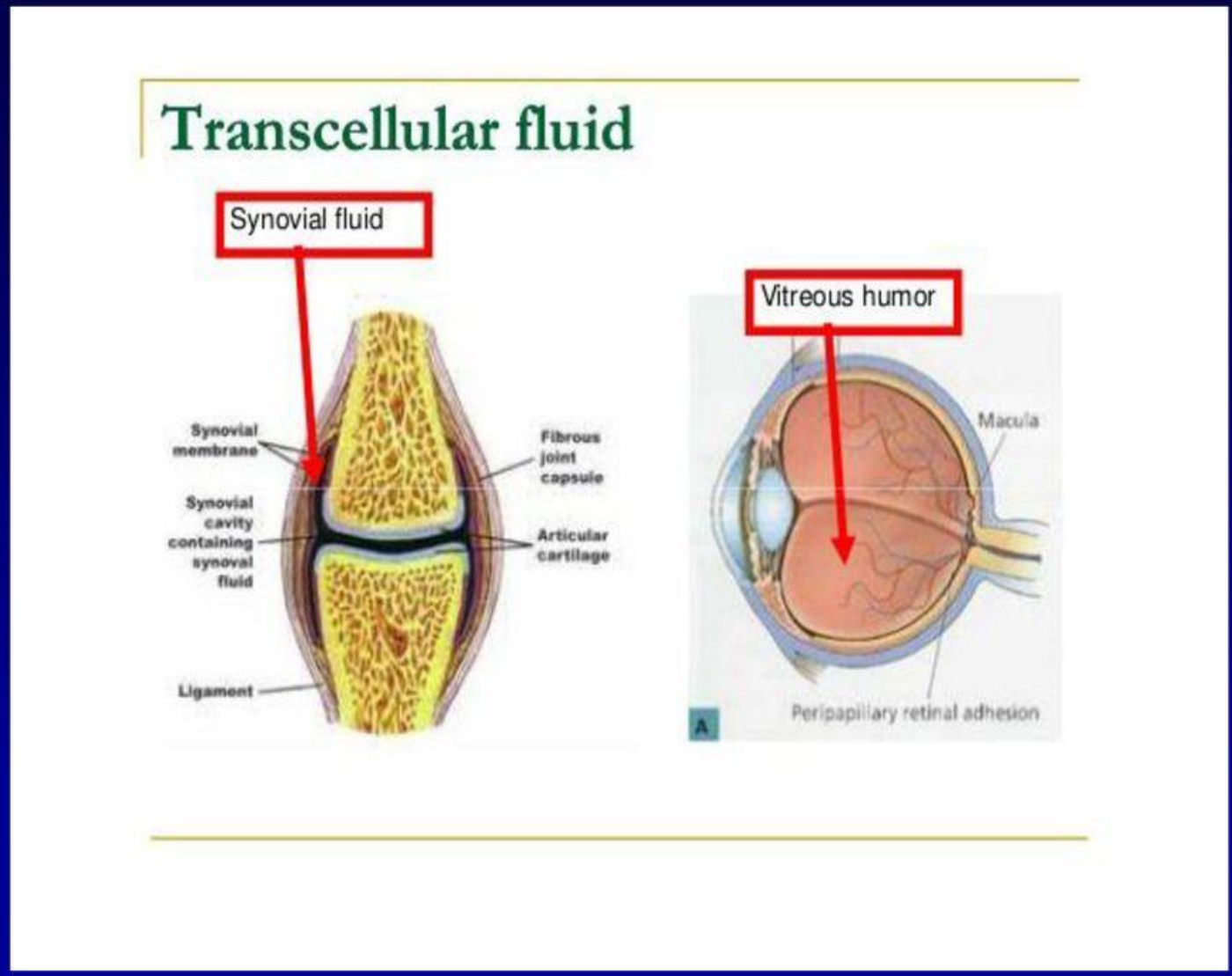
Plasma

Description: The liquid component of blood.
*Volume:*Approximately 3 liters in a 70kg adult.
Function: Transport of nutrient



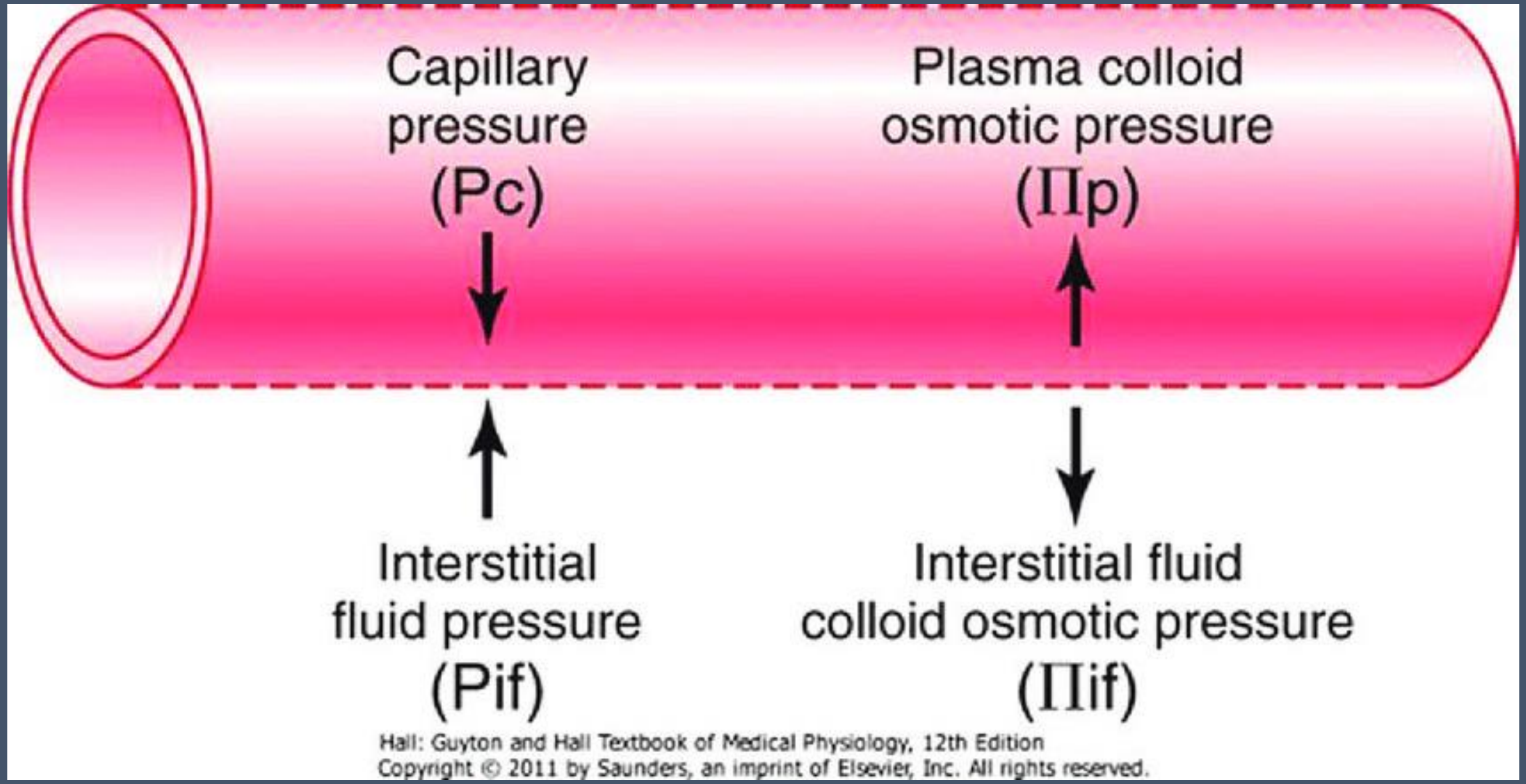
Transcellular Fluid

Description: Fluid in specific compartments like cerebrospinal fluid, synovial fluid, etc.
Examples: Cerebrospinal fluid, synovial fluid, aqueous humor.
Function: lubricates the organ in which it is present.



Specialized Fluids of the Body

- Lymph
- Milk
- Cerebrospinal fluid
- Amniotic fluid
- Aqueous humor
- Sweat
- Tears



Hall: Guyton and Hall Textbook of Medical Physiology, 12th Edition

Regulation of Body Fluids:

- ***Kidneys and Fluid Balance:***

- Kidneys regulate the volume and composition of body fluids.
  Renal function: Filtration, reabsorption, secretion.

- ***Thirst Mechanism:***

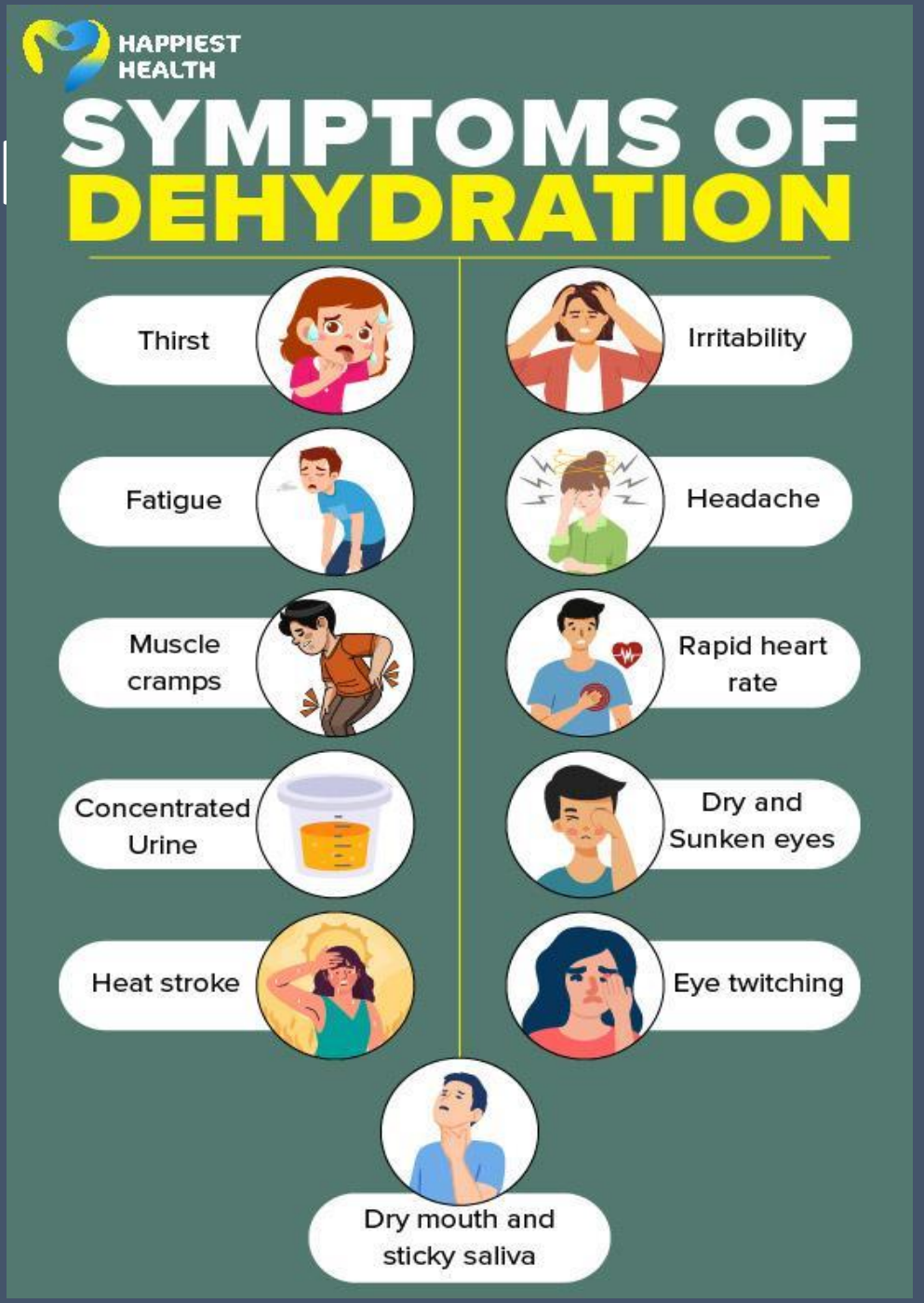
- Controlled by hypothalamus in response to changes in plasma osmolarity or volume.

Fluid Imbalance Disorder

Dehydration:

-Occurs when body loses more water than it takes in.

-Can be caused by excessive sweating, diarrhea, or inadequate fluid intake.

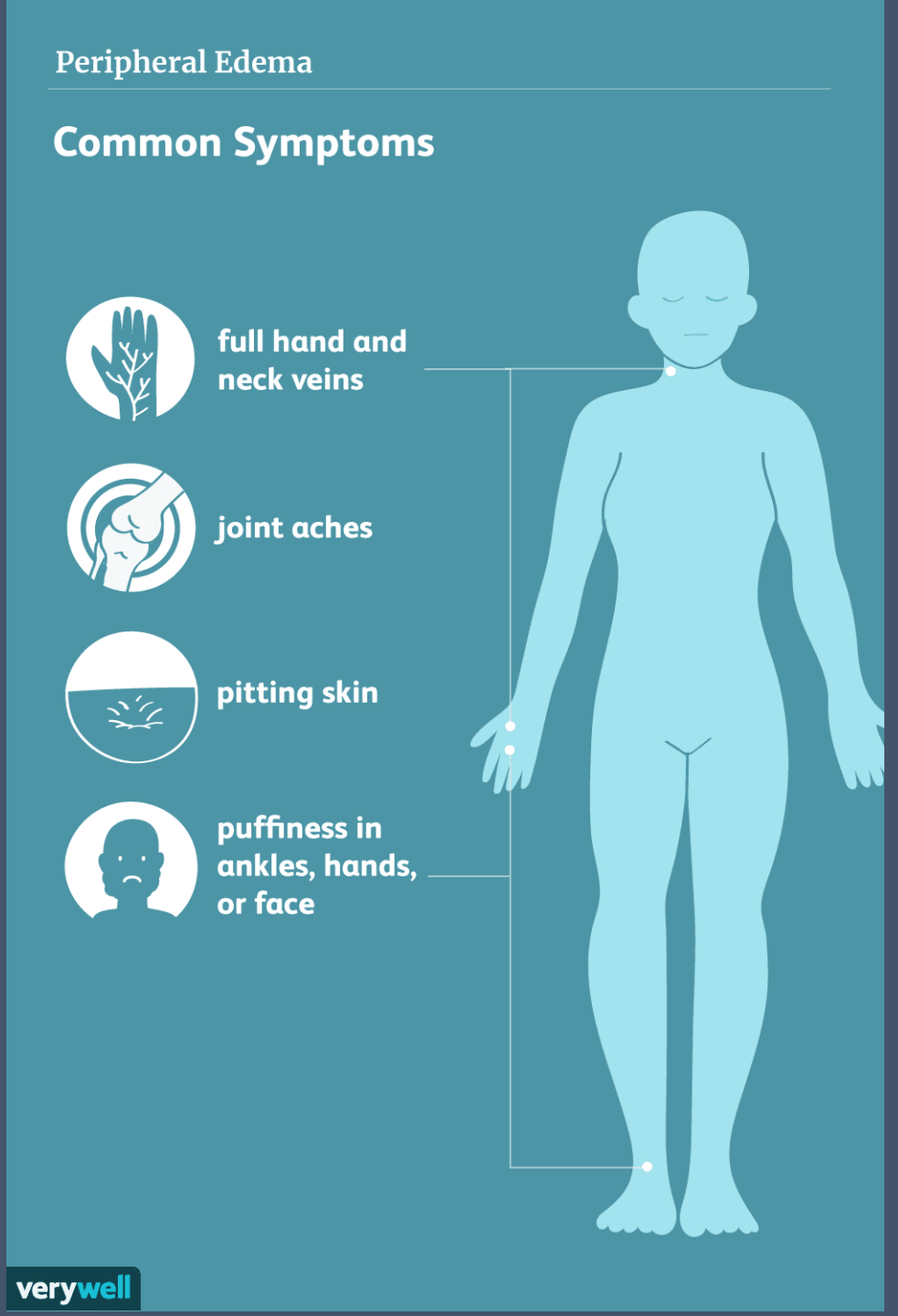


Fluid Imbalance Disorders

Edema:

Excess fluid accumulation in the interstitial space.

Causes: heart failure, kidney disease, liver cirrhosis



METHODS OF MEASUREMENTS

INDIRECT METHOD –
INDICATOR (DYE) DILUTION

- **YOU HAVE TO SELECT A SUITABLE DYE OR RADIO-ISOTOPE**

- V= VOLUME OF FLUID
- A= TOTAL AMOUNT OF DYE USED
- E= AMOUNT OF DYE EXCRETED OR LOST .
- C= CONCENTRATION

FORMULA
V=A-E/C