



SNS COLLEGE OF NURSING
Saravanampatti (po), Coimbatore.

DEPARTMENT OF NURSING
COURSE NAME : BSC (NURSING) I YEAR
SUBJECT : NUTRITION
UNIT: IX: WATER METABOLISM AND ELECTROLYTE
TOPIC : ELECTROLYTE BALANCE



INTRODUCTION



Electrolytes are the compounds which readily dissociate in solution and exist as ions i.e., positively and negatively charged particles. The electrolytes is expressed as **Milliequivalents (mEq/L)** rather than milligram.

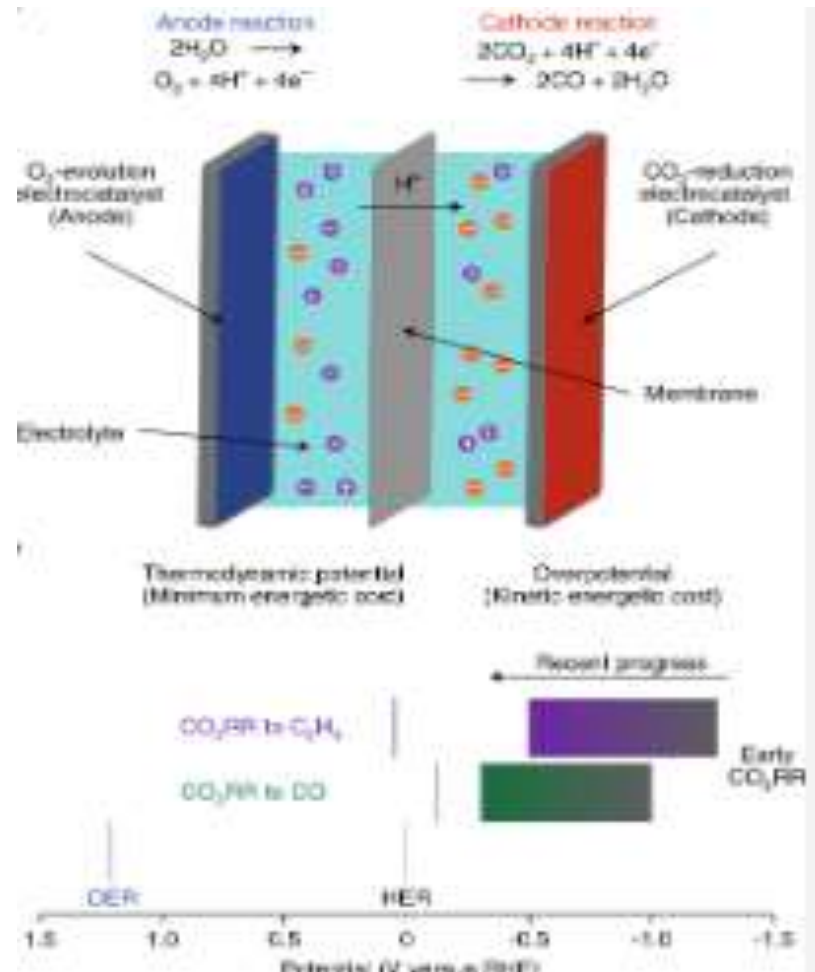




ELECTROLYTE COMPOSITION



- 1) Sodium
- 2) Potassium
- 3) Calcium
- 4) Magnesium
- 5) Chloride
- 6) Protein
- 7) Sulfate
- 8) Bicarbonate

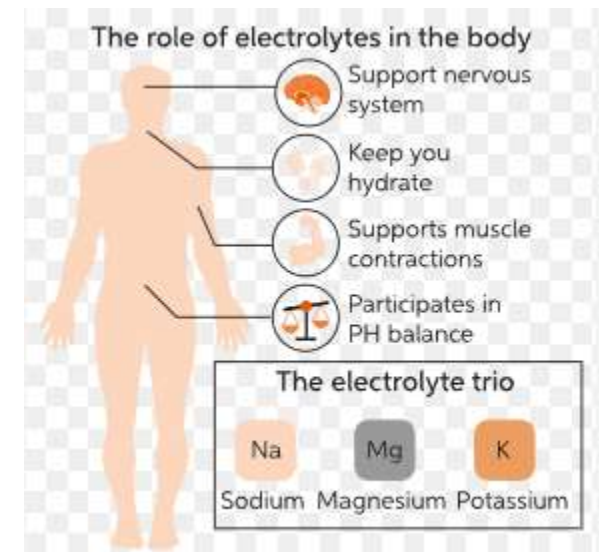




FUNCTIONS OF ELECTROLYTES

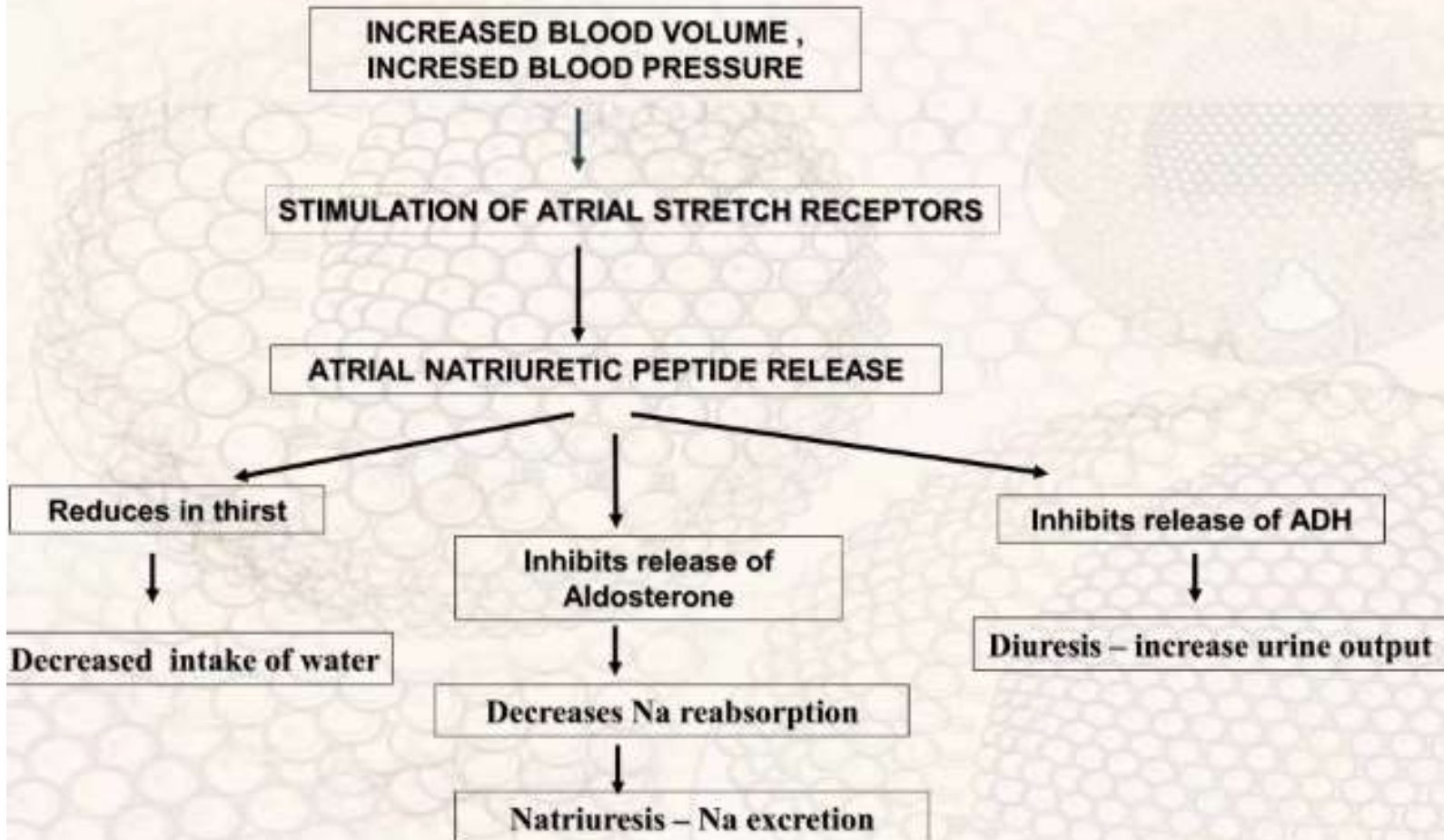


- 1) Promotes neuromuscular irritability
- 2) Regulate acid and base balance
- 3) Regulate distribution of body fluids among body fluid compartments.





REGULATION OF ELECTROLYTES

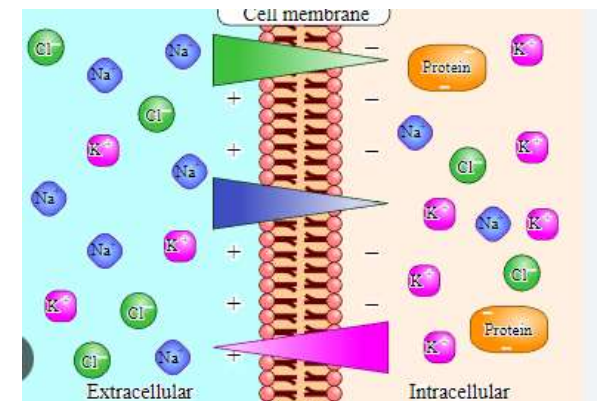


DISTURBANCE IN FLUID AND ELECTROLYTE BALANCE

TONICITY:- Abnormalities in fluid and electrolyte balance

HYPERTONIC:- Effective osmolality is increased due to dehydration of cells

HYPOTONIC:- Effective osmolality is decreased causes brain cell to swell and that leads to Headache, vomiting.





CLINICAL CONDITIONS



DEHYDRATION :

It occurs when the body loses too much fluid. Fluid can be lost through illness, sweating or exercise. Dehydration can cause muscle cramping.





OVER HYDRATION



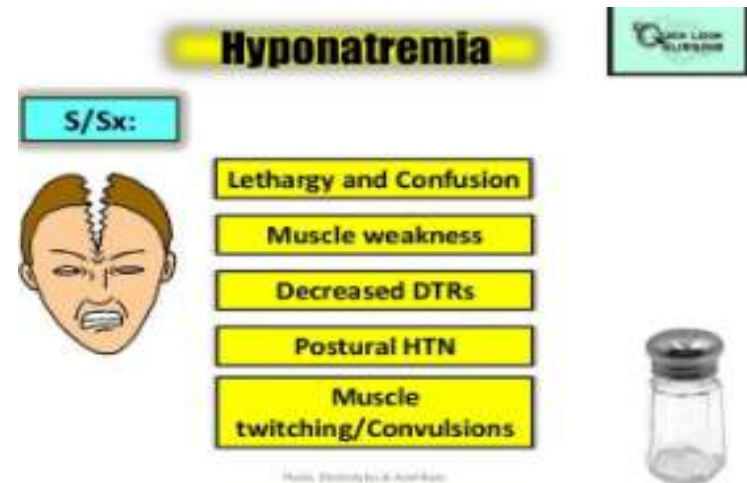
Over hydration can lead to water intoxication. This occurs when the amount the amount of salt and other electrolytes in the body become diluted.



ELECTROLYTE IMBALANCE

HYPONATREMIA:

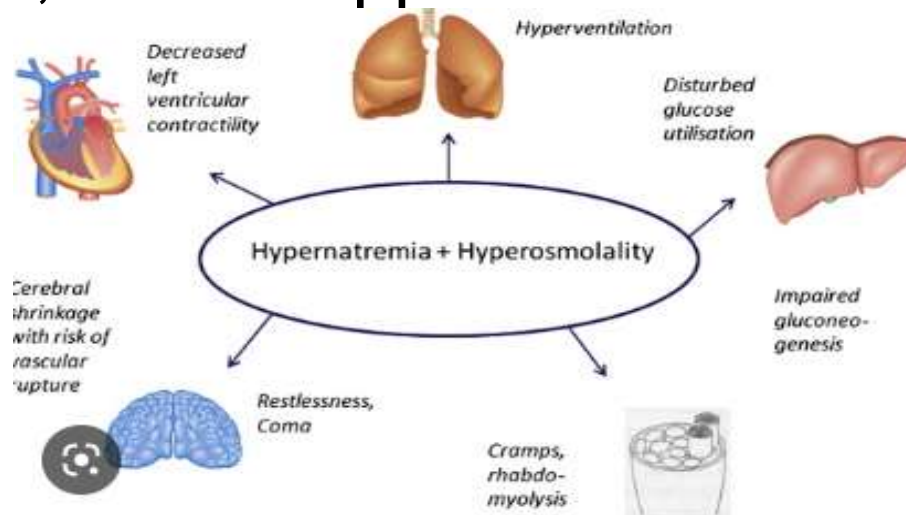
It is low sodium level in the blood, it defined as a sodium concentration of less than 135 mEq/L. The symptoms includes Confusion, Nausea and headache.



ELECTROLYTE IMBALANCE

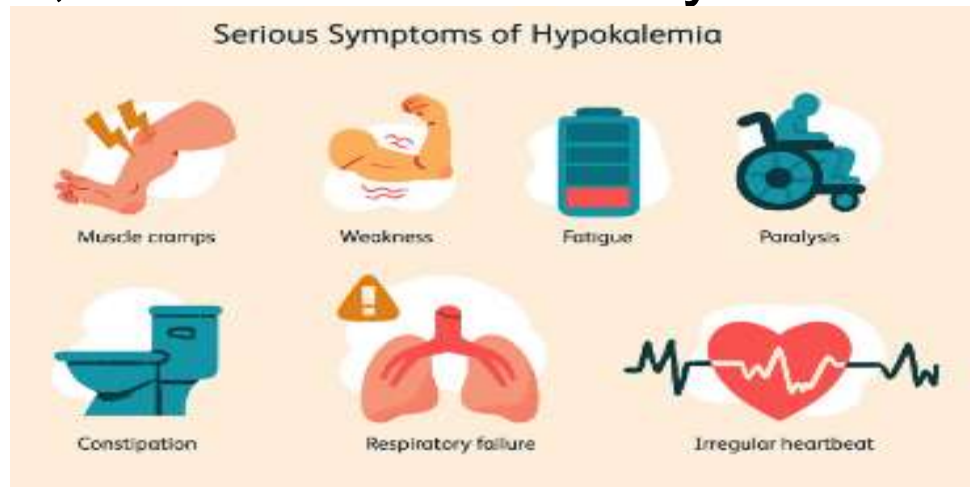
HYPERNATREMIA:

It is a high sodium ion level in the blood. Serum sodium level of more than 145 mmol/L. The symptoms includes muscle twitching, thirst, weakness, loss of appetite.



HYPOKALEMIA:


It is a low level of potassium in blood serum. The potassium level below 3.5 mmol/L. The symptoms includes Leg cramps, weakness and constipation, abnormal heart rhythm.



ELECTROLYTE IMBALANCE

HYPERKALEMIA:

It is an elevated level of potassium with levels above 5.5 mmol/L in the blood serum. The symptoms include palpitation, muscle pain, muscle weakness or numbness.



HYPERkalemia: More at: RegisteredNurseRN.com
Normal Level: 3.5-5 mEq/L

Causes:

- "The body **CARED** too much about K+."
- C**ellular movement of K⁺ from intracellular to extracellular (burns, tissue damage, etc.)
- A**drenal Insufficiency w/ Addison's Disease
- R**enal Failure
- E**xcessive K⁺ intake

S & S:
"Murder"

- M**uscle weakness
- U**rine output little or none (renal failure)
- R**espiratory failure (due to muscle weakness)
- D**ecreased cardiac contractility (weak pulse/low HR)
- E**arly: muscle twitches/cramps
- R**hythm changes: Tall peaked T waves,

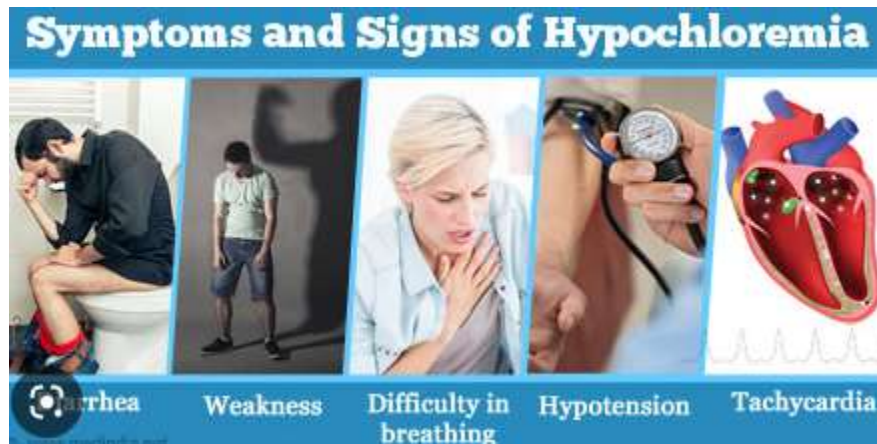
HYPERCHLOREMIA:

It is an electrolyte disturbance in which there is an elevated level of the chloride ions in the blood. The chloride levels at or above 110,Eq/L usually indicate kidney dysfunction.



HYPOCHLOREMIA:

It is an electrolyte disturbance in which there is an abnormally low level of the chloride ion in the blood. It is caused by hypoventilation, respiratory acidosis.

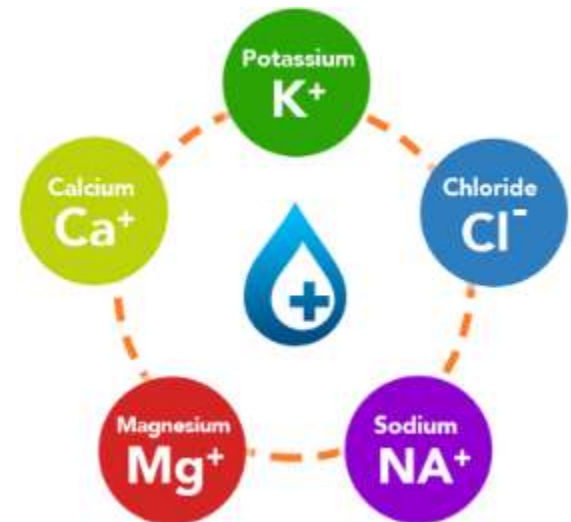




CONCLUSION



An electrolyte imbalance occurs when you have too much or not enough of certain minerals in your body. This imbalance may be a sign of a problem like kidney disease.





ASSESSMENT



- 1) Define electrolyte imbalance
- 2) Define Hyponatremia and hypernatremia.
- 3) Describe Importance of electrolytes in the body.



REFERENCE



- Darshan sohi, “ A comprehensive textbook of applied Nutrition and dietetics” , 3rd edition, published by Jaypee publication.
- Shella John, Jasmine devaselvam, “Essentials of Nutrition and dietetics for nursing”, 2nd edition, published by Wolters Kluwer.

