Water

- Water is the most abundant nutrient in the body and accounts for 60% to 70%

of an adult's total body weight and77% of an infant's weight. •

- It is a major component of body fluids, secretions, and excretions.
- Body water decreases as body fat increases and with aging.
- Water and electrolytes are substances that must be acquired from the diet.
- Normally the body maintains a balance between the amount of fluid taken in and the amount excreted.
- The requirements for body water are met through the consumption of liquids and foods and the oxidation of food.
- Solid foods, especially fruits and vegetables, contain 85% to 95%water.
- The normal daily turnover of water is 4% of an adult's total body weight and

15% of an infant's total body weight.

Function of the water

1. acts as a solvent .
2. serves as a means of transport .
3. regulates temperature control , and
4. provides lubrication for the body .

Requirements of body water

The body's requirement for water varies according to several factors :

a. environment .
b. activity level .
c. functional losses .
d. metabolic needs.
e. age and other dietary factors .

1. the average sedentary woman should consume2.7 L of water per day .
2. A sedentary man should consume 3.7 L of water per day .

Surrounding environment.

- As the temperature rises in the surrounding environment , body water is lostas sweat in an effort to maintain body temperature .
- water intake must accommodate such losses in sweat .

Activity level.

- more water is lost in sweat and respiration , and
- more water is necessary for the increased metabolic demand involved inphysical activity .

Functional losses.

- When any disease process interferes with the normal functioning of the body

, water requirements are affected for example , such as prolonged diarrhea ,large amounts of water may be lost .

- Uncontrolled diabetes mellitus causes an excess loss of water through urineas a result of high glucose levels in the blood .

Metabolic needs.

- Body metabolism requires water .
- A general rule is that roughly 1000 ml of water is necessary for every 1000 kcal in the diet .

Age.

- Age plays an important role in determining water needs , especially in infants , The average usual intake for infants age 0 to 6 months and 7 to 12 months is 700 ml and 800 ml total water per day from human milk and complementary foods , respectively.

Other dietary factors.

- Certain dietary additives and medications can affect water requirements because of their natural diuretic effect [Lasix] .
- Other dietary factors that have long been viewed as diuretics are alcohol andcaffeine .

The Human water balance system.

Body water: solvent amount and distribution

- Normal body water content ranges from 45% to 75% of the total bodyweight in adults.
- Men generally have 10% more body water than women , averaging 60% and50% total body weight , respectively .
- Differences generally are attributable to a higher ratio of muscle to fat massin males .
- Muscle contains significantly more water than does adipose tissue .

Body water is categorized in tow major compartments:

A- Extracellular fluid.

- The total body water outside the cell is called the extracellular fluid (ECF)
- This water collectively makes up approximately 20% of the total bodyweight and 34% of total body water .
- one fourth of the ECF (4% to 5% of the total body weight) is contained inthe blood plasma , or intravascular , compartment .
- The remaining three fourths (15% of the total body weight) is composed ofthe following:
    1. Water surrounding the cells and bathing the tissues (interstitial fluid
    2. Water within the lymphatic circulation , and
    3. Water moving through the body in various tissue secretions (transcellular fluid) .
- Interstitial fluid circulation helps move materials in and out of body cells .

B- intracellular fluid.

- Total body water inside cells is called the intracellular fluid (ICF) .
- This water collectively amounts to roughly twice that outside the cells , making up approximately 40% to 45% of the total body weight and 66%of total body water.

Water balance.

- Water enters and leaves the body by various routes controlled by basicmechanisms such as thirst and hormones .
- The average adult metabolizes 2.5 to 3 L of water per day in a balance between intake and output .

Water intake.

- Water enters the body in three main forms:

1. as preformed water in liquid that are consumed .
2. as preformed water in foods that are eaten and .
3. as a product of cell oxidation when nutrients are burned in the body of energy (i.e., metabolic water or " water of oxidation ") .

- The average water intake through fluids of adult men and women are 3L / day (approximately 13 cups) and 2.2 L /day (approximately9 cups)respectively .

Water output.

- Water leaves the body through the kidneys , skin , lungs, and feces .
- the largest amount of water exits through the kidneys .
- On average , the daily water output from the body totals approximately 2600ml , which balances the average intake of water.