

Chapter 24 Study Guide  
Water, Electrolyte, and Acid-Base Balance

1. What three homeostatic mechanisms regulate the cellular fluid medium?
2. Fluid compartments:
  - a. What are the two principle water compartments in the human body? (
  - b. How are the non-cellular volumes further subdivided?
  - c. Describe how water moves between these compartments:
3. Water gain and water loss:
  - a. What is water balance?
  - b. What terms describe gain and loss?
4. Regulation of intake:
  - a. Where is the thirst center located?
  - b. What is the three stimuli signal dehydration?
4. Water balance disorders:
  - a. What are the two kinds of water deficiency and how do they differ?
  - b. What are the fluid excesses?
5. What is fluid sequestration and give examples?
6. Electrolyte Balance:
  - a. What are the major cations and anions?
  - b. Describe the homeostatic mechanisms regulating these ions:
7. Acid-Base Balance
  - a. What is the difference between a strong acid and a weak acid (give examples)?
  - b. What is the difference between a strong base and a weak base (give examples)?
  - c. What is a buffer?
  - d. What is the difference between a physiological buffer and a chemical buffer?
  - e. What are the three major chemical buffer systems and explain how they work?

8. Disorders of acid-base balance:
  - a. Define acidosis and alkalosis: (less than 7.35 or greater than 7.45)
  - b. How is the electrical potential across the plasma membrane changed by acidosis and alkalosis?
  - c. What is the difference between respiratory acidosis and respiratory alkalosis?
  - d. What is the difference between metabolic acidosis and metabolic alkalosis?
  
9. Compensation for Acid-Base Imbalances
  - a. How is acidosis and alkalosis compensated for in the body?
  - b. Which form of correction is more effective?