

Water, Electrolyte, and Acid-Base Balance  
Chapter Study Guide - C27 / Tortora

1. What three homeostatic mechanisms regulate the cellular fluid medium?
2. Fluid compartments: What are the two principle water compartments in the human body? How are the non-cellular volumes further subdivided? Describe how water moves between these compartments:
3. What is water balance? How do we gain water? How do we loose water?
4. Where is the thirst center located? How do we sense dehydration? What is the role of ADH and aldosterone?
5. How may fluid excesses from drinking hypotonic water effect your body? What tissues are at greatest risk? Why?
6. What are the major intracellular and extracellular cations and anions?
7. What is the difference between a strong acid and a weak acid (give examples)? What is the difference between a strong base and a weak base (give examples)?
8. What is a buffer?
9. What is the difference between a physiological buffer and a chemical buffer?
10. What are the three major chemical buffer systems?
11. What is acidosis and alkalosis?
12. What is the difference between respiratory acidosis and respiratory alkalosis?
13. What is the difference between metabolic acidosis and metabolic alkalosis?
14. What is pH? What is the range of the pH scale? What number is the strongest acid? What number is the strongest base? What is neutral? What is blood pH?
15. Why is it critical that we regulate pH? Think about proteins!
16. What happens to pH when you hyperventilate?
17. What happens to respiratory rate when you hyperventilate?

## Hot List Questions - C27

1. What three components of our physiology must be regulated in order to maintain homeostasis?
2. How are these three components regulated?
3. How many water compartments are there in the human body? How are they subdivided?
4. What keeps the water in these compartments?
5. What is water balance?
6. How much water do we gain and lose each day?
7. What is a buffer?
8. How many different types of chemical buffer systems do we use?
9. Which buffer system is first to act? Explain
10. What is the difference between a physiologic and chemical buffer?
11. What stimulates thirst? Mechanism(s) Explain
12. What are the major intracellular and extracellular cations?
13. What are the sources of water gain and water loss?
14. How do we conserve water? Excrete water?
15. What is normal pH?
16. What happens to blood pH when you hyperventilate? Change in blood  $\text{CO}_2$ ?  
Change in respiration?
17. What happens to blood pH when you hypoventilate? Change in blood  $\text{CO}_2$ ?  
Change in respiration?