# Week 2: Team A Worksheet

Mr. K.B. is age 81 and has had gastritis with severe vomiting for 3 days. He has a history of heart problems and is presently feeling dizzy and lethargic. His eyes appear sunken, his mouth is dry, he walks unsteadily, and he complains of muscle aching, particularly in the abdomen. He is thirsty but is unable to retain food or fluid. A neighbor has brought Mr. K.B. to the hospital, where examination shows that his blood pressure is low, and his pulse and respirations are rapid. Laboratory tests demonstrate elevated hematocrit, hypernatremia, decreased serum bicarbonate, serum pH 7.35, and urine of high specific gravity (highly concentrated).

**Team A**

*Part 1: Day 1 – Early Stage*

Initially, Mr. K.B. lost water, sodium in the mucus content, and hydrogen and chloride ions in the hydrochloric acid portion of the gastric secretions. Alkalosis develops for two reasons, the first being the direct loss of hydrogen ions and the second being the effects of chloride ion loss. When chloride ion is lost in the gastric secretions, it is replaced by chloride from the serum (see Fig. 2.9 in your text). To maintain equal numbers of cations and anions in the serum, chloride ion and bicarbonate ion can exchange places when needed. Therefore, more bicarbonate ions shift into the serum from storage sites in the erythrocytes to replace the lost chloride ions. More bicarbonate ions in the serum raise serum pH, and the result is hyperchloremic alkalosis.

1. Describe the locations of intracellular and extracellular fluids. Which makes up a higher proportion of body fluid?
2. Which cell compartments are likely to be affected in this case by early fluid loss?
3. Explain how a loss of sodium ions contributes to dehydration. Why does this dehydration affect cell function?
4. Describe the early signs of dehydration in Mr. K.B.
5. What serum pH could be expected in Mr. K.B. after this early vomiting?
6. Describe the compensations for the losses of fluid and electrolytes that should be occurring in Mr. K.B.
7. How does the proportion of fluid in the body (from question above) change with age?
8. Explain why Mr. K.B. may not be able to compensate for losses as well as a younger adult?