BIO 26 PAL Worksheet
Week 5 (#2): Hypovolemic Shock Case Study

69-year-old Bertha Lynch has been living with diverticulitis (infection or inflammation of pouches that form in the intestines) for years. But this morning she noticed bright red blood in her stool. She isn't too concerned about it, because she feels otherwise fine, and continues with her day visiting an old friend. She makes it through lunch at the "Blue Agave" and shopping at the thrift store, but by dinner time is feeling light-headed, pale, cold, and very anxious. She begins to worry, especially since the bleeding has continued throughout the day.

When Bertha arrives at the emergency room, her blood pressure is 96/60 and she is very tachycardic (119 beats/min at rest). She receives an infusion of isotonic saline and a blood sample is drawn to determine her blood type for a later blood transfusion. A colonoscopy reveals a massive diverticular bleed in the large intestine. She is scheduled for surgery.

1. Why was Bertha's blood pressure low? Why was her heart rate elevated?

2. Explain why Bertha's skin was pale and cold. Would really cranking up the room temperature be helpful in this situation? Why or why not?

3. Draw an overview of the entire baroreceptor reflex.

4. If Bertha's urine output had been measured during the course of the day, would it likely have been higher than, lower than, or the same as that of a healthy person? Explain your reasoning.

5. If Bertha's urinary Na+ excretion rate had been measured over the course of the day, how would it likely have changed? Explain your reasoning.

6. Draw an overview of the entire Renin-Angiotensin-Aldosterone sytem. And explain how each component would be helpful in this situation.

BONUS: How would giving an IV of isotonic saline change Bertha's hematocrit? Which hormone is involved in RBC production? Where does it come from and when is it released?