**Literature Review**

What is the life cycle of a normal and sickle red blood cell and how does hemoglobin function in both types of cells?

According to Union County College, the process to develop new red blood cells takes up to four days and starts in the bone marrow from division of stem cells. From there synthesis of hemoglobin takes places, and at this time large amounts of hemoglobin can be observed. After the hemoglobin is synthesized, the nucleus is extracted and “**These cells exhibit a net-like appearance or reticulum in their cytoplasm when stained. A small number of reticulocytes (only 1 to 3% of the circulating red cells) are found in the circulation.” Next, the cells lose ribosomes and the cells are finally added into the blood stream (Life Cycle of the Erythrocyte). Finally, they are carried to the spleen, land lungs where they are destroyed, and their blood and iron is released to flow and nourish the rest of the body.In a sickle erythrocyte, the process is the same however, due to the mutation in Hemoglobin S, the oxygen in the red blood cell is short lived, as the abnormal hemoglobin uses up all of the oxygen instead of circulating it throughout the body. Because of this, the sickle cell dies in half the time a normal red blood cell would die (**Hemoglobinopathies). At this time, the millions of red blood cells all dying at the same time are sent to the spleen or lungs to be destroyed before the bone marrow can produce new red blood cells. The lack of red blood cells that are alive and bringing oxygen and iron to the body is limited which is often why sickle cell patients such as Cheryl suffer from enlarged spleens and iron deficiency anemia. The most common way available to replace all of the missing oxygen is to be placed on the ventilator; a place where Cheryl had often been for too long.