Research Assessment #2

Date: September 11, 2020

Subject: Stem cells and blood transfusions

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Assessment:

Hematology and oncology are two closely related subjects, and they both interest me greatly. I knew that they crossed over each other because both studies have a lot in common and it is not unlikely for some oncologists to have studied hematology. At first, I thought that hematology was just about the study of blood. I recently learned that it is so much more than that.

Blood transfusions are very important, and for some patients, they are critical. However, in many parts of the world, there is a strong need for blood donations. Lots of people have conditions that require them to have blood transfusions, and if they don't get them, it could be life-threatening. I gained a new perspective by researching this topic. I knew that generally, developing countries tended to have less access to resources, medicine and healthcare systems that developed countries, but I didn't know the extent to which there was a need for blood. In developed countries, there already are shortages in blood supply sometimes, and to imagine the supply of blood in developing nations is just eye-opening. In order to help keep up with this shortage of blood, there are some alternative methods being researched.

One of these is producing RBCs through stem cells. RBCs are red blood cells, and they are vital in transporting oxygen throughout the body. Stem cells have been found to carry higher amounts of RBCs, and they also have less side effects, meaning that there is less likely to be a problem of a patient not being able to accept the blood, or having complications from it. Even in comparison to peripheral blood and cord blood, RBCs have been shown to be much more effective from stem cells. I knew that cord blood has been used before to cure some diseases. It is so interesting to see that it is also being used in some blood transfusions for blood disorders as well.

There is enough blood supply for most blood types, but what about the rest? Could you design a research project similar to this one to test out the production of the O Rhesus D negative blood type? This blood type was unable to be produced. It is the universal donor blood, but using the researched method there isn't a way to produce it, according to the scientists. There are so many people who do not have access to the blood they need because they have a rarer blood type than most people, and it makes it harder for them to find blood. Researchers found that by a similar methodology in producing RBCs from stem cells, they may be able to scale-up production of the blood cells. How many more people would have access to it if this could be done? What if we could continue research like this so more people could get the blood they need? So many people with different blood types or rarer blood types, who are in dire need of blood could finally have a transfusion.