

Activity 3.1.2: Sickle Cell Diaries

Introduction

When Anna Garcia was 14 months old, she was admitted to the hospital with a variety of serious symptoms. Anna’s parents were very scared and were not sure what was happening with their daughter. Ultimately, this hospital trip led to her diagnosis of sickle cell anemia. Sickle cell anemia is an inherited disorder affecting millions of people around the world. Almost all patients with the disease experience painful episodes, known as *crises*, like the first one Anna had as a baby.

Living with sickle cell anemia can often be difficult, especially for children. Patients dealing with the disease have to alter their lifestyle in order to avoid anything that may cause a crisis, such as certain medications, high altitudes, and strenuous exercise. They are often fatigued due to chronic anemia and have a high rate of infection. In this activity you will learn about what it is like for a person dealing with this serious disease. You will review Anna Garcia’s medical records to learn more about her diagnosis. You will read her diary entries, which will detail what life was like for her living with sickle cell anemia. You will then be assigned a fictitious patient who is undergoing a treatment for sickle cell disease. You will write diary entries for your assigned patient detailing how they are feeling and a description of the treatment they are receiving, including the risks and benefits. You will also include a narrative of all of the biomedical professions the patient encounters during their treatment journey.

Equipment

* Computer with Internet access
* Laboratory journal
* PBS Course File
* Activity 3.1.2 Medical History Resource Sheet
* Activity 3.1.2 Diary Entries Resource Sheet
* Career journal
* Career Journal Guidelines

Procedure

1. Obtain an Activity 3.1.2 Medical History Resource Sheet from your teacher.
2. Read through this piece of Anna’s medical history.
3. Answer Conclusion question 1.

Almost every patient with sickle cell anemia experiences painful episodes called crises. These crises can last anywhere from a couple of hours to several days. The piece of Anna Garcia’s medical history that you just read is the documentation of Anna’s first sickle cell crisis. These crises vary from person to person. Some patients experience an episode only once every few years, while others experience many episodes per year. The crises can be severe enough to require a hospital stay. As part of Anna’s long term treatment plan, Anna’s doctor asked her to keep a diary documenting all of her crises.

1. Obtain a Activity 3.1.2 Diary Entries Resource Sheet from your teacher.
2. Make a graphic organizer in your laboratory journal that includes the following categories: symptoms, benefits associated with treatment, risks associated with treatment, biomedical professionals involved, and lifestyle concerns.
3. Read through the four diary entries and highlight or underline important information. As you read, take notes in the appropriate categories of your graphic organizer.
4. Answer Conclusion questions 2 and 3.
5. Add any new ideas to the Possible Causes of Death section on the Activity 3.1.1 Autopsy Report.
6. File the Activity 3.1.2 Medical History Resource Sheet and the Activity 3.1.2 Diary Entries Resource Sheet in the appropriate tabs of your course file. Use the PBS Course File – Table of Contents as a guide.
7. Note that your teacher will assign you one of the following sickle cell anemia patients:

* 4 year old male being treated with antibiotics and folic acid supplements
* 7 year old female being treated with chronic transfusion therapy
* 15 year old male who will have a bone marrow transplant

1. Write two journal entries from the perspective of your assigned patient or from the perspective of the patient’s parents. Include the following information in your journal entries:

* The symptoms the patient is experiencing and how this is affecting daily life.
* An explanation of what the treatment entails, including the risks and benefits
* A description of at least two of the biomedical professionals working with the patient. One of the biomedical professionals must be a hematologist. The description must detail the role the professionals played in the patient’s case. Note that you will complete career journal entries for these two professionals later in this activity.

1. Answer Conclusion question 4.
2. Collaborate with two classmates who were assigned other patients. Share your journal entries with these classmates. Create a graphic organizer similar to the one you created in Step 5 and take notes as they share their journal entries with you.
3. Follow the Career Journal Guidelines and complete two entries in your Career Journal for the two careers included in your patient journal entries.
4. Follow the Biomedical ScienceDocumentation Protocol to correctly document or cite the sources of information you used.
5. Update the classroom evidence board with information from Lesson 3.1.
6. Answer the remaining Conclusion questions.

Conclusion

1. Based on what you know about blood, why would having a sickle cell anemia crisis result in a reduced red blood cell count, an elevated white blood cell count, and a reduced hematocrit?
2. Based on what you learned in the previous activity, why did having sickled red blood cells lead to the symptoms documented in Anna’s medical history when she was 14 months old?
3. Describe three ways daily life is affected for those who have sickle cell anemia.
4. Describe at least five symptoms of a sickle cell crisis.
5. Describe the pros and cons of the treatments used for each of the sickle cell anemia patients investigated in this activity.