

Leukemia

Introduction

Cancer has been very prominent in my life. Many of my family members along with even some of my close friends have been through this battle. When I was in second grade a close friend of mine started missing school frequently. My mom wouldn't tell me why, then one day my friend came back to school, but she looked very sick. Later that day my class had a meeting, my friend was very brave and wanted to tell everyone that she had leukemia. She showed us a cartoon all about leukemia and while we were watching the video I held her hand. She pulled through amazingly and we have been close ever since. This was the first time Leukemia hit home.

Besides my best friend fighting a battle with leukemia, my grandmother on my dad's side also was diagnosed with leukemia when I was in second grade. She lived in Florida so I didn't get to see her very often. In fourth grade my little sister was born, my grandma was still battling leukemia. This horrible form of cancer would always come and go, so before fifth grade we decided it was time to take a trip down to Florida so that my grandma could meet my little sister. I remember that trip like it was yesterday. I loved seeing my grandma and the fall was the perfect time to go see her. Not too long later I came home from school and my dad was sitting at the table his head in his hands. I knew something was wrong, I went over and he told me that my grandma had passed away. He asked me to go with him to the wake and funeral, but being so little I was afraid. To this day I regret not going. Leukemia has affected many people in my life and I have just been very interested in learning more about it.

Section 1: Background and Problem Statement

- **Web site #1 Name:** Ped-Onc Resource Center
- **Web address:** <http://ped-onc.org/diseases/leukcauses.html>
- **Background Information:**
 - Because Healthy People 2020 had nothing about leukemia I had to search for other Web sites. I decided to look at the environmental causes of leukemia. There are not many agents that have been documented as environmental causes of leukemia, but two appear commonly: benzene and radiation. Scientists say that in ALL it takes about 2 to 3 "hits" for a normal cell to turn into a leukemia cell. These hits can be totally random and may be a cause of DNA synthesis. It is also said that magnetic fields or power lines can be the cause of leukemia. Leukemia can also come about by an inappropriate response to a virus or infection.
- **Web site #2 Name:** National Cancer Institute
- **Web address:** <http://www.cancer.gov/cancertopics/types/leukemia>
- **Background Information:**
 - Defined as cancer that starts in the bone marrow and causes large number of blood cells to be produced and enter the bloodstream. In 2011 there were 44,600 new cases and 21,780 deaths. Leukemia makes abnormal white blood cells that don't die when they are supposed to. These cells crowd the other cells and don't let the others perform their functions.
- **Web site #3 Name:** Childhood Cancer: Leukemia

- **Web address:** http://kidshealth.org/parent/medical/cancer/cancer_leukemia.html#
- **Background Information:**
 - ALL affects children years 2 to 8. No one has control over the factors that trigger leukemia. Leukemia accounts for about 25% of all childhood cancers; it affects 2,200 young people each year. The chances for a cure are very good with leukemia and most children can go without it ever coming back. 60% of children with leukemia have ALL and 38% have AML.

Section 2: Research

Web site #1 Name: Leukemia & Lymphoma Society

- **Web address:** <http://www.lls.org/diseaseinformation/leukemia/>
- **Summary of the research:**
 - Leukemia is a type of cancer that affects the blood and bone marrow. This disease develops when the blood cells in the bone marrow grow out of control. Leukemia is categorized by the type of cell it affects. The four main types of leukemia are: Acute Myeloid (AML), Acute Lymphoblastic (ALL), Chronic Myeloid (CML), and Chronic Lymphocytic (CLL). AML progresses quickly and affects undeveloped cells. ALL affects the blood cells and immune system; it progresses rapidly and should be treated right after diagnosis. CML has three different phases, and is usually detected during the chronic phase when treatment is very effective. CLL begins in the bone marrow and can progress quickly or slowly depending on the type.

- **Web site #2 Name:** WebMD

- **Web address:** <http://www.webmd.com/cancer/tc/leukemia>

- **Summary of the research:**

- Some of the symptoms of leukemia are fevers and night sweats, frequent or unusual infections, weakness and fatigue, headaches, bruising, bleeding of the gums or rectum, bone pain, joint pain, swelling in the belly or pain from a swollen spleen, swollen lymph nodes, decreased appetite and weight loss. These things may happen because in leukemia there are too many abnormal white blood cells. When there are too many abnormal white blood cells they crowd out the normal cells and keep them from doing their job, therefore you might bleed or bruise easily, have more infections, and feel very tired.

- **Web site #3 Name:** Lab Tests Online

- **Web address:** <http://labtestsonline.org/understanding/conditions/leukemia/>

- **Summary of the research:**

- Over time the leukemia cells spread throughout the bloodstream causing tumors and damaging organs such as kidneys and liver. Since the spleen is responsible for filtering blood it may become swollen. Leukemia is categorized by the type of white blood cell that is effected and how quickly the disease progresses. In the United States 40,000 adults and 3,500 kids are affected by leukemia each year. It is said that exposure to radiation, benzene, and some other anticancer drugs have been shown to increase the risk for leukemia, but a real cause for leukemia is unknown.

Section 3: Statistics

- **Web site #1 Name:** Leukemia Research Foundation
- **Web address:** <http://www.leukemia-research.org/page.aspx?pid=214>
- **Summary of the statistics:**
 - As of 2010 there were an estimated 43,050 new cases of leukemia and 21,840 deaths due to leukemia. Leukemia is the leading cause of death by disease in children and young adults age 0-20. Everyday 118 people are diagnosed with leukemia and 60 of those lose the fight. There was more information about how much leukemia affects the population. From personal experience and from looking at the research I believe that leukemia, just like any other cancer, is very pertinent in our world. This type of cancer mostly affects young adults and children, therefore it is very important to diagnose this right away so that our future generation can live on. I would have to say that this disease is slowly getting better as technology and new medicines advance.

- **Web site #2 Name:** National Cancer Institute
- **Web address:** <http://seer.cancer.gov/statfacts/html/leuks.html>
- **Summary of the statistics:**
 - Between 2004- 2008 the median age of diagnosis was 66 years. The median death of leukemia was 75 years. As of January 1, 2008, there were approximately 253,350 men and women who were living with leukemia. Also 1 in 77 men and women will be diagnosed with leukemia sometime during their life. It appears that all races are affected by leukemia, but men were more likely to have the disease than women. We can't be too quick to say that this problem is getting better or worse, we can note that many people are affected by this disease and without treatment they will die from it.

- **Web site #3:** Center for Disease Control and Prevention
- **Web address:** <http://www.cdc.gov/cancer/hematologic/leukemia/statistics/race.htm>
- **Summary of the statistics:**
 - Out of 100,000 people from the year 1999- 2007, white people had the highest incident rate of leukemia. Black and Hispanic people had the next highest incident rate. Men had a higher incident rate than women, in all races. There was a graph that showed that white people were more likely to die than any other race. Then came blacks and Hispanics; this graph also showed that men were more likely to die from leukemia than women. From both of the graphs it would appear that the death rates and incident rates have been slowly decreasing. This decrease is very slight, but at least it shows a decrease and not a rise in deaths by leukemia. From this information we are able to say that we are slowly improving our treatment of leukemia.

Section 4: Consumer Information

- **Web site #1 Name:** Pub Med

- **Web address:** <http://www.ncbi.nlm.nih.gov/pubmed/1063911>
- **Summary of the information:**
 - I was really interested in how many people leukemia affected and what the death rate of leukemia patients was. On this Web site 315 patients were examined over a period of seven years. It was shown that infection alone was the leading cause (75%), then hemorrhage (24%), and organ failure (9%). This study indicated that infection continues to be the leading cause of death in patients with leukemia and that even though there has been development of antibiotic therapy, ultimate control of infection needs to be improved.

- **Web site #2 Name:** Cleveland Clinic
- **Web address:** http://my.clevelandclinic.org/disorders/diseases/leukemia/can_overview.aspx
- **Summary of the information:**
 - I was also very curious about how leukemia develops in the body and on this Web site I was given a more detailed description of the process. Our bone marrow is responsible for producing most of our blood cells; these blood cells start out from a single cell called a stem cell. When the stem cell divides, one cell stays as a stem cell and the other can become a lymphoid cell or myeloid cell. Different types of leukemia can transform during different stages of maturation. It results in an overproduction of the cells and an underproduction of the important cells that carry out daily activities. The type of cell affected and the number of cells helps to determine the type of leukemia.

- **Web site #3 Name:** Children with Leukemia
- **Web address:** <http://www.jlsfoundation.org/treatments/bmt.html>
- **Summary of the information:**
 - I knew that a bone marrow transplant was a type of treatment for leukemia in children, but I wasn't really sure exactly what it was so I decided to research more. A bone marrow transplant in a child allows the child to receive high doses of chemotherapy. This transplant introduces new blood cells into the body in hope that they will fight infection and repair the body. There are different types of bone marrow transplants: Allogenic- which come from a matched sibling or parent, Syngenic- (rare) involves taking bone marrow from identical twin, and Autologus- the child's own bone marrow is harvested while the child is in remission. This happens to be one of the most expensive treatments starting at \$250,000.

Section 5: Solutions to the Problem (or Issue)

- **Web site #1 Name:** Fox Chase Cancer Center
- **Web address:** <http://www.fccc.edu/cancer/types/hematologic/leukemia.html>
- **Summary of the information:**
 - There is no cure for leukemia, but there are ways to treat this cancer and put it into remission. The Fox Chase Cancer Center says that it is very difficult to treat leukemia patients because it affects the blood cells and there are everywhere

throughout the body. Chemotherapy is the best way to treat leukemia patients. Although CML can be treated with a drug or “leukemia pill” that was created because doctors were able to target the deformity. Surgery alone is not enough to treat these patients. Doctors will perform blood and bone marrow tests in order to better diagnose the leukemia and find a better treatment. The goal of treatment is complete remission. Fox Chase is a cancer center that has been top ranked for 17 consecutive years. They are a hundred bed hospital and they are the only hospital dedicated only to cancer treatment. They are a non-profit organization that was established in 1974.

- **Web site #2 Name:** MDAnderson Cancer Center
- **Web address:** <http://www.mdanderson.org/patient-and-cancer-information/cancer-information/cancer-types/leukemia/index.html>
- **Summary of the information:**
 - This center is the largest leukemia center in the world. With 25 specialized physicians this center customizes a treatment for every patient. This center starts with an accurate and precise diagnosis of the type of leukemia the patient has, then they evaluate the risk factors to determine what kind of treatment is necessary. From here the center recommends the most advanced therapy with the least impact to the patient’s body. You can be treated as an in-patient or an out-patient. This center realizes that the patient’s time is valuable and therefore offers a fast track lab and clinic for out-patients.

- **Web site #3 Name:** Mayo Clinic
- **Web address:** <http://www.mayoclinic.org/leukemia/>
- **Summary of the information:**
 - This is a non-profit medical organization that uses all its money to help further research in the medical field. The doctors at this clinic are specialized in cancer treatment and have also treated rare conditions. Part of Mayo Clinic’s mission is to find new and better ways to treat their patients; therefore you will always receive the best treatment suited for your disease. Everything is under one roof at Mayo Clinic, whether you need surgery, test, etc. Because there is ongoing research at Mayo Clinic patients with leukemia will be in reach of new treatments that might not be present elsewhere.

Conclusions

I thought that I knew a lot about leukemia because it had been present in my life twice, but after doing this fact sheet I found that some of my theories were either wrong or incomplete. It was really interesting for me to see who was affected most by this disease. Some people will just group leukemia into the general cancer topic, but after doing all this research I believe that leukemia does need to stay separated from the other cancers. Treatment for leukemia tends to be harder than treatment for cancer because it cannot be done by simply removing a tumor, since leukemia affects the blood cells. Leukemia along with any cancer is never good to hear about, but it is very nice to know that there are many centers out there that are helping patients fight their battle while offering them the newest type of treatment available.

Back to Betty C. Jung's Web site	<u>http://www.bettyjung.net</u>
Back to Fact Sheet Directory	<u>http://www.bettyjung.net/Pch202fs.htm</u>