



Hodgkin's Disease: Then and Now

Prepared by Suzie Precup



National Science Content Standard

- A – Develop Descriptions, Explanations, Predictions, and Models Using Evidence
- A – Recognize and Analyze Alternative Explanations and Predictions

Learner Objectives

1. Students will develop subject matter knowledge base and effectively form explanations.
2. Students will be able to differentiate explanation from description.
3. Students will be able to establish relationships based on evidence and logical argument.
4. Students will be able to listen to and respect other student's explanations.
5. Students will remain open to consider alternative explanations.

Activity

1. Have students take notes on the various definitions related to Hodgkin's Disease.
2. Show Students beans and gelatin water while defining lymph system.
3. Explain radiation treatments between 1920 and 1960.
4. Present statistical information on Miss Riley's physical environment (air)
5. Worksheet
6. State the survival rate for 1960 and explain how Miss Riley may have felt.
7. Have students act out how they might feel if they were sick.
8. State the survival rate for today and why there is such a dramatic change in survivors.
9. Construct a bar graph using logical reasoning

Background

The student would have information pertaining to coal mining, dust, and black lung disease. Although this lesson doesn't call for an hypothesis, allow students to make logical guesses through their connections to Coalwood, WV, and their community today.

Materials

Pencil and paper for note taking
Beans
M&M's
1 package gelatin
2 liters water in clear container
Red and Blue Colored Pencils, Markers, or Crayons

Resources

<http://epmnet.columbia.edu>
<http://www.fbsites.com/levi/paper.htm>

Evaluation

Question and answer sessions and discussion
Worksheet and graph



Hodgkin's Disease: Then and Now

Prepared by Suzie Precup



Hodgkin's Disease: Then and Now Teacher's Notes

Definitions:

1. Cancer: A malignant tumor of potentially unlimited growth that expands locally by invasion and systematically by metastasis.
A sick cell that continues to get bigger and bigger making all cells around it sick, this sickness can travel to other parts of the body making them sick as well.
2. Lymphoma: Cancer of the lymph system.
3. Lymph System: A network of tiny vessels connecting hundreds of bean-sized glands called lymph nodes located from head to toe. This system contains organs such as the lymph nodes, spleen, and thymus. Other organs such as the liver, stomach, small intestines, tonsils and skin also contain some lymph.
Have students place beans (lymph nodes) on various parts of their bodies.
4. Lymph: is a clear fluid that circulates through the system.
Show students the water as a representation of the lymph.
5. Lymphocytes: The white blood cells that make up most of the lymph fluid. Lymphocytes are critical to the body's defense against disease since they kill, break down, engulf or otherwise destroy poisons or disease that invade the body.
Pour gelatin into the water to represent the millions of white blood cells.
6. Hodgkin's Disease: Type of lymphoma
Hodgkin's is distinguished by the presence of one type of cell, the Reed-Sternberg Cell, named after the scientist who discovered its presence. Other types of lymphomas do not contain the Reed-Sternberg cell. These cells spread in a unique and predictable manner. They start in the lymph nodes and moves from one part of the lymph system to the next. Then, they move into organs including the lungs, liver bone and bone marrow.
Use M&M's to represent the Reed-Sternberg cells. Have students lay their beans out on the table, then mix in some M&M's. Have them add more M&M's and take away beans to represent the progression of Hodgkin's Disease.



Hodgkin's Disease: Then and Now

Prepared by Suzie Precup



Hodgkin's Disease Then

In the first half of this century before antibiotics became readily available, radiation therapy was used to treat several benign disease, such as acne, scalp ringworm, enlarged tonsils, enlarged thymus, enlarged lymph nodes in the neck as a result of tuberculosis, whooping cough and keloid scars.

Over one million young Americans received these treatments to the head or neck between 1920 and 1960. Miss Riley was born in the 1920's. At the time, it was not known that the long-term effects of this therapy would cause cancer. Once the association between radiation treatment and cancer was established, therapy was discontinued.

In 1963, the five-year survival rate for Hodgkin's was only 19%.

Miss Freida J. Riley

May have displayed the painless swelling of her lymph nodes. She would have also experienced loss of appetite and weight loss, along with nausea, vomiting, indigestion and abdominal pain or bloating. She would have experienced severe fatigue, night sweats and frequent recurring high fevers on a daily basis.

It is not known how it actually gets started, because the immune system is so complex and dynamic there are many opportunities for errors. These errors are statistically more probable when the immune system is continually stimulated.

Have students demonstrate what it might be like to have the symptoms of Hodgkin's

Hodgkin's Disease Now

Advances in chemotherapy, radiation treatments, bone marrow transplants, and most recently stem cell treatments the five-year survival rate for Hodgkin's is 92%, and 98% for children.

This could have been the case for Miss Riley's immune system having to continually filter the toxins and poisons from her body after years of inhaling coal dust. She may have been one of a million children who received radiation treatment for non-terminal illnesses.



Hodgkin's Disease: Then and Now

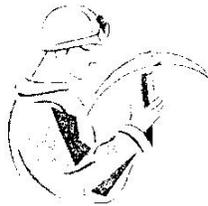
Prepared by Suzie Precup



Hodgkin's Disease Worksheet

Circle the answer you agree with.

1. *People* *Machines* mined for coal in the 1950's.
2. *People* *Machines* mine for coal today.
3. The coal dust *could have* *could not have* contributed to Miss Riley developing Hodgkin's Disease.
4. Miss Riley *could have* *could not have* received radiation therapy as a child.
5. People who lived in coal mines *are* *are not* the only people to get Hodgkin's Disease.
6. Today people *get* *do not get* Hodgkin's Disease.
7. Today people *usually* *never* live longer than 5 years with Hodgkin's Disease.





Hodgkin's Disease: Then and Now

Prepared by Suzie Precup



Hodgkin's Disease: Then and Now

Answer the following questions with a logical guess. Use your answers to create a bar graph.

In 1957, how many people out of 100...

Mined for coal _____

Lived in a coal mining community _____

Received unprotected radiation treatment as children _____

Developed Hodgkin's Disease _____

Died from Hodgkin's Disease _____

In 2004, how many people out of a 100...

Mine for coal _____

Live in a coal mining community _____

Receive unprotected radiation treatment as children _____

Develop Hodgkin's Disease _____

Die from Hodgkin's Disease _____





Hodgkin's Disease: Then and Now

Prepared by Suzie Precup



Hodgkin's Disease: Then and Now

Use Red for 1957, and Blue for 2004, to create your bar graph.

