

Learning Can Be Fun!

Epidemics and Pandemics in Our Global Society

In the 19th century, when Poe wrote *The Masque of the Red Death*, an epidemic of tuberculosis was a leading cause of death in cities. This disease, also called consumption, claimed the life of Edgar Allan Poe's wife, Virginia. Tuberculosis is a highly infectious disease that primarily affects the lungs, but can also impact the kidneys, bones, lymph nodes and brain. It is transmitted by coughing, sneezing, etc. It is possible to be infected with the bacterium without showing symptoms. Of the one-third of the world's population infected with TB, about one in ten will develop active symptoms. If the body's immune system forms a wall around the bacteria without destroying them, a granuloma (lump) or tubercle is formed. The bacteria can be released and cause infection later if the immune system becomes compromised.

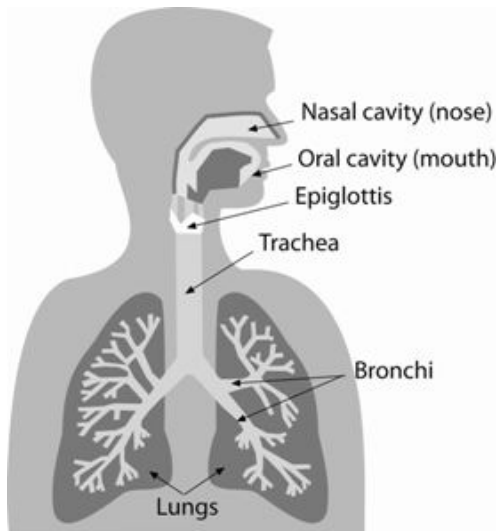
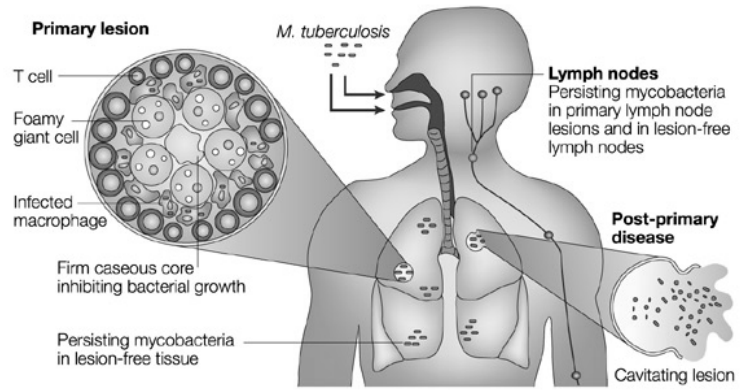


Diagram courtesy of www.european-lung-foundation.org/uploads/WEB_CHEMIN_441_1149242364.jpg



Nature Reviews | Microbiology

Diagram courtesy of www.nature.com/nrmicro/journal/v1/n2/images/nrmicro749-f1.jpg

In the early 1900s, Dr. Edward Trudeau, himself a tuberculosis patient, went to the cool, clean air of the Adirondack Mountains in upstate New York to try to regain his health. Experiencing success, Dr. Trudeau became convinced that the cool air was instrumental in his recovery. He opened a sanitarium in the small logging town of Saranac Lake, New York. The village became an important center for the treatment of tuberculosis. The many porches on homes in town are evidence of this. People who owned cottages took in patients who would sleep on the porches in the crisp mountain air. Sleeping porches are still an integral part of many homes in the area.

In the early 1800s, some people considered tuberculosis a “romantic” disease that affected artists, poets and people in “high society.” Actually, the spread of tuberculosis was caused by industrialization and overcrowding, thus becoming a social problem as well as a medical condition. The “red death” in Poe's story reflected the destructive nature of tuberculosis in the 19th century, but his story still has meaning in the 21st century.

Activity:

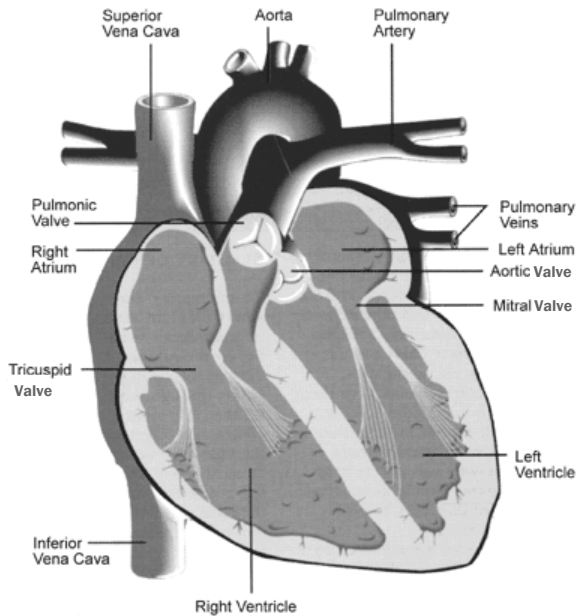
Read Edgar Allan Poe's *The Masque of the Red Death*.

In groups or as individuals, research the effects of modern epidemics such as tuberculosis or AIDS on today's society. What lessons can we learn from *The Masque of the Red Death*? What actions can responsible citizens take to avoid the fate of the ignorant Prince Prospero in light of these modern “red deaths”? What response would you suggest if swine flu becomes a pandemic? With global travel easy and prevalent, the spread of disease around the world has been facilitated. Isolated epidemics that remain restricted to one country are less likely in a world in which air travel between countries is common.

Information in part courtesy of http://encarta.msn.com/text_761576449_0/Tuberculosis.html

Expanding Your Mind!

Understanding Blood, Blood Flow and the Heart



Blood low in oxygen is brought into the right side of the heart (right atrium) by the superior vena cava and inferior vena cava. Oxygen-rich blood enters the left atrium via the pulmonary vein. The mitral and tricuspid valves enable the flow of blood from the left atrium and right atrium into the left and right ventricles. From the right ventricle, blood is pumped out through the pulmonic valve into the pulmonary artery and then to the lungs, where it picks up fresh oxygen. Then it travels back through the pulmonary veins to the left atrium. Blood from the left ventricle is pumped through the aortic valve into the aorta and then into the body, eventually returning to the heart through the superior vena cava and inferior vena cava as oxygen-poor blood.

Diagram courtesy of www.niaaa.nih.gov/Resources/GraphicsGallery/CardiovascularSystem/DiagramofHeart...

Answer the questions below. If you don't know the answers, look them up online (see websites below) or in the library. The heart is a very important and interesting organ.

1. What is meant by blood type? How many types are there? Can you name the main ones?
2. Why might it be important to know your blood type? What could happen if you needed blood and were given the wrong type?
3. How do the various blood types differ from each other?
4. What cells are contained in the blood? What are their functions?
5. What are the main parts of the heart? Why is blood pumped to the lungs?
6. Indicate the direction of blood flow to and from the heart on the diagram above.

Information courtesy of http://encarta.msn.com/text_761564042__0/Blood_Type.html, http://encarta.msn.com/text_761578429__22/Blood.html, <http://my.clevelandclinic.org/heart/heartworks/bloodflow.aspx>

