

Avian Influenza: Will History Repeat Itself?

Topic: This lesson plan compares the 1918 Spanish influenza pandemic to the current outbreak of avian influenza in Southeast Asia.

Themes: A number of themes will be emphasized in this lesson. The themes include the following:

- Avian influenza viruses exist in many forms, some fatal to both humans and birds, some fatal to just birds, and others fatal to neither humans nor birds.
- The current outbreak of avian influenza in Southeast Asia and the 1918 Spanish influenza pandemic originate from avian influenza viruses that broke the species barrier by transferring from birds to humans.
- Human activity, communication level, and scientific discovery can help or hinder the spread of disease.

Lesson Goals: The goals of this lesson plan are as follows:

- Students will learn the Spanish Influenza pandemic and the influence of WWI on its movement around the globe.
- Students will understand how the spread of Spanish Influenza influenced the outcome of World War I.
- Student will understand the characteristics of the avian influenza virus, known as H5N1 that is killing wild and domestic bird populations and small numbers of humans mostly in Southeast Asia.
- Students will understand what aspects of Southeast Asian culture make it difficult to control outbreaks of H5N1 in bird and human populations.
- Students will understand the similarities and differences between the Spanish influenza pandemic of 1918 and the current outbreak of avian influenza in Southeast Asia.

Standards:

This lesson plan is designed to be part of a middle school unit on World War I, with an emphasis on bringing the War into perspective with current world events. As such, it applies to the following **7 and 8 grade core curriculum:**

- II. *The United States Begins to take a Role in Global Politics*
 - E. *The United States entered the war (WWI)*
 - 2. *The war effort created changes on the home front*
 - And
 - F. *The United States and the Peace Process*

It is impossible to understand the First World War without an understanding of the everyday lives of people at home. The Spanish influenza pandemic of 1918

defined the lives of most Americans with the same kind of stark realities brought on by the war itself. The end of the First World War came with armistice and the peace process, but not before the impact of the Spanish influenza tired troops, civilians and governments. Spanish influenza is an important little acknowledged influence on the end of the First World War.

With students hearing about avian influenza through rumor, adult discussions, new stories and other sources of information, the subject of World War I and Spanish influenza is an excellent opportunity to offer pertinent, accurate information about avian influenza and Southeast Asia.

With little adaptation, this lesson plan can be offered in a grade 10 Global History and Geography course. *Unit Eight: Global Connections and Interactions*, in the outline of the **core curriculum** for 10 grade Global History and Geography stipulates that *epidemics* be a topic of discussion. This lesson plan connects one historic epidemic to a possible future epidemic.

Organization and Timeline: This lesson plan will take three or more days, depending upon class time taken for the final assignment. While it is designed for the middle school, U.S. History curriculum it is easily adaptable as a current events lesson plan or as part of a unit on Southeast Asia.

Interdisciplinary component:

Essential concepts discussed in this lesson plan are also core concepts covered in intermediate biology classes. The characteristics of viruses, the pathology of specific diseases, and the concepts of epidemics and pandemics are all integral parts of this lesson. The interplay of culture, human activity, and disease make this lesson plan about human biology and social studies.

Resources Needed and Preparation

- Overhead projector.
- Classroom set of world atlases.
- Copies of all attached assignments.
- Overheads of all images and notes attached. You may want to make a classroom set for students to look at during the lesson.
- Overhead of newest published copy of **Cumulative Number of Confirmed Human Cases of Avian Influenza A/(H5N1) Reported to WHO**, which can be found at the World Health Organization website. See: http://www.who.int/csr/disease/avian_influenza/en/index.html
- Television and vcr/dvd player for supplementary activity.

Teacher Resources

The teacher may find the following background resources helpful:

Appenzeller, Tom. "Tracking the Next Killer Flu." *National Geographic* Oct. 2005: 2-31.

Avian Influenza. 27 March 2006. World Health Organization Regional Office for South-East Asia. 28 March 2006.

<<http://w3.who.sea.org/en/Section10/Section1027.htm>>

Avian Influenza (Bird Flu). 27 March 2006. Department of Health and Human Services, Center for Disease Control and Prevention. 28 March 2006.

<<http://www.cdc.gov/flu/avian>>

Azevedo, Michael. *Influenza 1918: The Worst Epidemic the United States Has Ever Known*. PBS American Experience. 28 March 2006.

<<http://www.pbs.org/wgbh/amex/influenza/>>.

Epidemic and Pandemic Alert Response: Avian Influenza. 27 March 2006. World Health Organization. 28 March 2006.

<http://www.who.int/csr/disease/avian_influenza/en>

Iezzoni, Lynette. *Influenza 1918: The Worst Epidemic in American History*. New York: TV Books, L.L.C., 1999.

Sipress, Alan. "Bird Flu Adds New Danger to Bloody Game: Cockfighting Among Asian Customs to Put Humans at Risk." *Washington Post Foreign Service* 14 April 2005: A16.

Content Knowledge and Skills

- Students should have a familiarity with the origins, significant events, and outcome of the First World War.
- Students should be familiar with Southeast Asia geographically, politically or historically.
- Students should have completed the background assignment on the geography of Southeast Asia before coming to class the first day of the lesson. (See Appendix A: *Mapping Southeast Asia*)

Day 1

I. Introductory Hook

As students enter the classroom ask them to take out their journals or a piece of paper. Show them the images titled *Military Physicians* (See Appendix B: *Military Physicians, which can be found on the following website: <http://www.pbs.org/wgbh/amex/influenza>*) and *Touch and Go* (See Appendix C: *Touch and Go*) Tell the students that they are seeing two images of doctors and their patients. Ask them to spend some time looking at each image. Then ask them to compare what they are seeing in each photograph. Give them about ten minutes to write about the similarities and differences. The following questions may help them think about what to write:

1. *How are the patients being cared for?*
2. *How can you tell who the doctor is in each photo?*
3. *What kinds of expressions and body language does the doctor in each photo have?*
4. *Describe how the patient in each photo looks. How are these men being cared for?*
5. *Compare and contrast the technologies being used in each photograph.*

After the students have finished, have a discussion about what they have written. Then explain the following points to the class.

A. In the photograph titled "Military Physicians," a doctor and nurse treat an American soldier who has a mysterious form of influenza (commonly known as the flu). The popular term for this illness was Spanish influenza. This photograph was taken in 1918.

B. In the second photograph titled "Touch and Go," a doctor watches a Vietnamese patient with a mysterious form of influenza. He was not expected to live but went home two months later. This picture was taken in 2005. The sick young man contracted an extremely deadly form of the influenza, commonly known as the bird flu.

C. Explain to the students that for the next couple of days they are going to learn about Spanish, a world-wide flu pandemic that killed millions of people in 1918. They are going to compare Spanish influenza to the current outbreak of avian influenza affecting bird populations in many parts of the world and killing small numbers of humans mostly in Southeast Asia.

II. Lesson Content:

- A. Begin by asking students to take notes on important vocabulary for this lesson. Put *Vocabulary to Know* on the overhead. (See Appendix D: *Vocabulary to Know*.) Go over the list with students as they write.

- B. Mentioning World War I
 1. Remind students that that World War I was a war fought mainly in Europe during the years between 1914-1918. You may want to mention a few key points including:
 - a. The war ended in an armistice, or an end to the war with no one surrendering; a war that ends in a draw.
 - b. Soldiers fought from all over the world including the United States.
 - c. New forms of weaponry combined with old styles of military techniques, raising the number of soldiers and civilians killed.
 - d. Though there were large numbers of people killed as a result of the war (15, 500,000 military and civilian), many more were killed as a result of the Spanish Influenza pandemic of 1918-1919.

- C. Spanish Influenza
 2. Ask students to describe their experiences with the flu. Ask them how they felt, what were their symptoms, how long it took them to feel better, if they stayed home from school, what their doctors said, etc.
 - a. Explain to students that when people catch a seasonal flu it is different from pandemic flu.
 - b. Pandemic flu is a strain of influenza virus that the human body has not developed resistance to.
 - c. Explain that while most people get sick and become better after a few days with seasonal flu, many people suffer with symptoms of pandemic flu and don't get better. Patients with this form of the disease find their health deteriorate and in some cases patients die.
 3. Put up the overhead titled Spanish Influenza 1918-1919. (See Appendix E: *Spanish Influenza, 1918*.) Explain how the pandemic began and how the war spread the pandemic, making two waves of the illness.

4. Put up quotes by doctors. (See Appendix F: *How They Suffered*.) Ask students to read the overhead silently. When they are finished ask them to if they understood what they read. Ask for volunteers to explain what they read. The following questions may help spark discussion:
 - a. *How did the doctor describe conditions of the patient? What is cyanosis?*
 - b. *What is he trying to say when he describes the corpses being stacked like “cord wood”?*
 - c. *Can you imagine what it might have been like to care for the sick in this situation? Do you think doctors and nurses were afraid of getting sick?*
 - d. *How might you have reacted if someone you loved had symptoms of Spanish influenza? Would you send them to the hospital?*

5. Put up the overhead titled, *Emergency Hospitals* (See Appedix G: *Emergency Hospitals, which can be found at the following website: <http://www.pbs.org/wgbh/amex/influenza>) Explain the following information to students:
 - a. Emergency hospitals were created in school gyms, there were coffin shortages, and people were afraid to leave their houses.
 - b. The human influenza virus, a microorganism, smaller than bacteria, is so small that scientists didn’t have the technology to identify it. Doctors came up with vaccines aimed at killing bacteria, but they had no effect upon a virus.
 - c. Unlike most other influenza viruses, which might make a person sick for a while, with a relatively quick recovery, this particular type of influenza virus was especially virulent.*

6. Put up the overhead titled *Government and Citizens Respond*. (See: Appendix H: *Government and Citizens Respond*) Go over the government responses with an emphasis on Woodrow Wilson’s response. (Note: Wilson caught Spanish influenza while negotiating the treaty at Versailles. Some historians have speculated that his illness may have contributed to his inability to convince England and France to refrain from condemning Germany for the war.) Discuss folk cures with students.

7. Briefly discuss the numbers of people who caught Spanish Influenza (See Appendix I: *Numbers*). Offer the following information to students:
 - a. *World War One ended in on November 11, 1918. The end of the second wave of deaths as result of the pandemic took place in October 1918. Some historians have postulated that the decision to call and armistice was influence by the outbreak of Spanish influenza. Do you agree or disagree with this idea? Explain.*

II. **Homework:**

Pass out the Homework Assignment. (See Appendix J: *Letter From Camp Devons*.) Explain to the students that they will be reading an excerpt from a letter written by a doctor who cared for soldiers who caught Spanish Influenza. Go over the homework assignment.

Note to Teacher: The PBS series, American Experience, produced a particularly good documentary on the Spanish Influenza pandemic of 1918. The episode, *Influenza 1918*, is worth showing to students, as an extension to this lesson plan. PBS offers a good web-based resource to accompany the video at <http://www.pbs.org/wgbh/amex/influenza/>. The site also gives ordering information for the American Experience video.

Day 2

I. **Introductory Hook:**

- A. Tell the students the following story:

As you know 670,000 Americans died as a result of the Spanish Influenza pandemic. Some of the victims of the pandemic were from Alaska. One particular woman was buried in permafrost, permanently frozen soil. As a result, her body was preserved. Scientists traveled to Alaska in the 1950s and took some tissue from this woman's body, hoping that someday it would lead to a clue about the origins of the pandemic. In 2005 scientists were able to analyze the genetic code of the virus that killed the woman in Alaska and 40 million others around the world in 1918. They found that the virus developed in birds. In fact, the virus, much like the avian influenza virus outbreak going on in Southeast Asia today, jumped species, moving from birds to human populations.

- B. Show the overhead image titled Touch and Go. (See Appendix C: *Touch and Go*.) Explain that this person contracted H5N1 strain of Avian Influenza. Explain that the patient is Vietnamese and that he survived his experience. Go over the details of the photograph.
1. Explain to the students that they are going to learn about the H5N1 avian influenza outbreaks in Southeast Asia.
 2. Tell the students that they should be trying to discover if there are any parallels between this current outbreak and the pandemic they learned about yesterday.

II. **Lesson Content:**

- A. Show the overhead titled, *What is Avian Influenza?* (See Appendix K: *What is Avian Influenza?*)
1. Go over with students. Emphasize the similarities between Spanish influenza and H5N1.
 2. Ask students to pull out their map assignments. Have a volunteer note which countries in Southeast Asia experienced outbreaks of avian influenza in domestic bird populations. Have another volunteer note which countries in Southeast Asia have experienced outbreaks of avian influenza in human beings.
- B. Place a copy of the *Cumulative Number of Confirmed Human Cases of Avian Influenza A/(H5N1) Reported to WHO* on the overhead projector. (See: http://www.who.int/csr/disease/avian_influenza/en/index.html) Discuss the numbers with the students.
1. Be sure to note the number of cases from Southeast Asia (150 of 186) and the number of deaths (84 of 105) in Southeast Asia. While the disease is spreading to new areas of the world (Africa and the Middle East) Southeast Asia experienced the biggest outbreaks and the number of cases is on the rise.
 2. Point out that roughly half the cases in humans have ended in death, making this virus especially deadly to human beings.
 3. Point out the relatively small overall number of cases, noting that H5N1 is far from a pandemic. Explain again that without the ability to move easily from human to human H5N1 will not be capable of being a pandemic disease.
 4. Tell students that there are some possible explanations for why H5N1 hit Southeast Asia so hard.
- C. Place the image, *Foot Soldiers* on the overhead. (See Appendix L: *Foot Soldiers*)

1. Explain to students that there may be a few reasons why Southeast Asia is experiencing avian influenza outbreaks in humans.
2. Explain to students that there has been a growth in small backyard farms in many countries in Southeast Asia. (Vietnam, Thailand, Cambodia, Indonesia etc.)
3. Explain that chickens and ducks are raised for food to sell at outdoor food markets, for eggs etc. These birds are often an important source of food and income. They often roam free, can be brought into the house in bad weather, are in yards where they are in contact with children etc.
4. Point out that ill chickens will often not be destroyed, nor will they be reported to local animal health inspectors. When they die, they are often eaten despite their illness. While eating a well-cooked chicken will not be harmful, human exposure to live and uncooked chicken with avian influenza can increase the likelihood of catching the disease. Ask students why they think a family might choose to keep sick birds, despite the risk? (*If these animals are the main source of income and food, people are reluctant to report sick poultry, as it increases the likelihood that their entire flock will be destroyed by health inspectors.*)
5. Discuss *Foot Soldiers*. Ask students why they think this hen house might be of concern to Health inspectors. (*It's over water; the house isn't sanitary, holes in the materials, etc.*)
6. Ask students to think about what is smart about this hen house set up. Remind them that it was probably not the intention of the owners to set up a hen house that might harm their chickens or harm them. (*Holes in the floor send waste farther away, materials are inexpensive and local and easy to replace, hens are over water and can't get away and are kept safe from possible predators etc.*)

C. Place the image, *Markets* on the overhead. (See Appendix M: *Too Close For Comfort*)

1. Explain to students that the image is of a vender in Vietnam taking unsold ducks home. Tell the students that there is a preference for live birds, and that people often have their meat slaughtered in these outdoor markets. It is also common for people who buy their meat at these markets to take the poultry home and slaughter it there.
2. Explain to students that this increases the likelihood of exposure to avian influenza for people who work in these markets, for people who shop in these markets and for animals who are transported back and forth.
3. Ask students to think about what might be the advantages of this kind of poultry purchasing. (*The ability to examine the animal for health problems before it is killed, access to meat for people who don't have refrigerators or freezers.*)

- D. Place the image, *Dangerous Liaison* on the overhead. (See Appendix N: *Dangerous Liaison*) on the overhead.
1. Explain to students that cockfighting is a very popular sport in certain countries in Southeast Asia. (*Thailand, Indonesia, Vietnam etc.*) In the image they see, a man is sucking the blood from a wounded fighting rooster.
 2. Note that there are 30 million fighting roosters in Thailand alone. Successful fighting roosters can bring in much needed extra money. (A prize-fighting rooster can be sold for a lot of money. Betting with a successful rooster also increases income.)
 3. Cockfighting roosters are raised with loving care. They are exercised, given a special diet, and are trained to fight. The humans who raise them and those who watch the fight are at risk for acquiring avian influenza, because of the amount of blood, mucus and saliva that is around during the fights.
 4. Anticipate that students may find cockfighting shocking. Ask students about "blood sports" acceptable in Western culture. (*Boxing, Hockey, Football, Rugby.*) Encourage students to note similarities and differences between their favorite "blood sports" and cockfighting.
- E. Let students know that governments around the world are attempting to deal with the possibility that this could be the next pandemic in a variety of ways:
1. Destruction of infected bird populations.
 2. Vaccination of bird populations
 3. Public awareness campaigns
 4. Vaccination of at risk human populations with Tamiflu, a drug that has been shown to be effective against H5N1.
 5. The creation and stockpiling of Tamiflu.

Conclusion: Discuss with students similarities and differences between the Pandemic of 1918 and avian influenza, H5N1 by posing the following questions:

- A. *What event do historians believe started the Spanish Influenza Pandemic of 1918? How is this similar to the origins of the current outbreak of H5N1?*
- B. *What were the symptoms of Spanish Influenza? What are the symptoms of H5N1 in humans? How do these symptoms compare to one another?*
- C. *It seems that both Spanish Influenza and H5N1 originated in bird populations? How does this fact relate to the pathogenicity of each virus when it encounters human populations?*
- D. *What is a pandemic? Why is Spanish Influenza considered to be a pandemic? Do you believe that H5N1 will become a pandemic? What*

characteristics does it have that make a pandemic possible? What necessary characteristic is missing from H5N1, which will make a pandemic possible?

- E. *Many countries in Southeast Asia are experiencing outbreaks of H5N1 in domestic bird populations and in small numbers of human. What Southeast Asian countries have experienced outbreaks in bird populations? In humans? What are some explanations for this? What are the sorts of things that need to be done in order to reverse these trends?*
- F. *How has learning about this outbreak increased your awareness of Southeast Asian culture? What aspects of Southeast Asian culture make it a part of the world where outbreaks of H5N1 are more likely to occur? What benefits are there to understanding a bit about the culture of Southeast Asia for anyone interested in eradicating H5N1?*

Final Evaluation: Pass out a copy of the final assessment to each student. (See: Appendix N *Brochure for Travelers to Southeast Asia*) Go over the assignment with the class.

Current Events Update:

As of May 2006, some countries mentioned in this lesson plan are reporting positive new developments regarding avian influenza. Vietnam, who had half of the human cases of H5N1, reports no new human cases or poultry outbreaks this year. Thailand, who is the third hardest hit nation (Indonesia is second after Vietnam) had no new outbreaks in the past six months.

For a New York Times story on the subject see, *Avian Flu Wanes in Asian Nations It First Hit Hard*.

<http://www.nytimes.com/2006/05/14/world/asia/14flu.html?ex=1305259200&en=41357a0196e3fe25&ei=5088>

Appendix A: Mapping Southeast Asia

Directions:

Please use the attached map and the list below to identify the countries of Southeast Asia.

1. Look at the list of the eleven countries of Southeast Asia.
2. Using the map provided to you and also located on the World Fact Book website, identify the capitals of each country on the list and write them in the space provided.
[http://www.cia.gov/cia/publications/factbook/reference_maps/southeast_asia.html]
3. Place the names of each capital, followed by the country name in the appropriate space on the blank map of Southeast Asia. Use the following format: **Capital, Country**
4. Place an **X** by the name of the country on the map, if there have been any outbreaks of avian influenza in domestic bird populations. Draw a **stick figure** next to the name of the country on the map if there have been outbreaks of avian influenza in human populations. The information is listed below.

Country List:

1. Brunei
Capital: _____
2. Burma
Capital: _____
(Outbreak in domestic bird populations.)
3. Cambodia
Capital: _____
(Outbreak in domestic bird populations and in humans.)
4. East Timor
Capital: _____
5. Indonesia
Capital: _____
(Outbreak in domestic bird populations and in humans.)
6. Laos
Capital: _____
(Outbreak in bird populations.)
7. Malaysia
Capital: _____
(Outbreak in bird populations.)
8. Philippines
Capital: _____
9. Singapore

Capital: _____

10. Thailand

Capital: _____

(Outbreak in bird populations and in humans.)

11. Vietnam

Capital: _____

(Outbreak in bird populations and in humans.)

Appendix B: Military Physicians



Military physicians were baffled by the mysterious illness that was striking young, healthy soldiers.

Appendix C : Touch and Go



Appendix D: Vocabulary to Know

Vocabulary to Know

1. Influenza: An acute contagious viral infection characterized by inflammation of the respiratory tract and by fever, chills and muscular pain.
2. Pathogenic: Capable of causing disease.
3. Bacteria: Single cellular, microorganisms, which may be pathogenic to plants or animals.
4. Virus: Any of various simple submicroscopic parasites of plants, animals, and bacteria that often cause disease and that consist essentially of a core of RNA or DNA surrounded by a protein coat. Unable to replicate without a host cell, viruses are typically not considered living organisms .
5. Pneumonia: An acute or chronic disease marked by inflammation of the lungs and caused by viruses, bacteria, or other microorganisms and sometimes by physical and chemical irritants.
6. Cyanosis: A bluish discoloration of the skin and mucous membranes resulting from inadequate oxygenation of the blood.
7. Epidemic: Spreading rapidly and extensively by infection and affecting many individuals in an area or a population at the same time:
8. Pandemic: Epidemic over a wide geographic area and affecting a large proportion of the population.
9. Endemic: Prevalent in or peculiar to a particular locality, region, or people.

Spanish Influenza, 1918-1919

- It began at Fort Riley in Kansas, March 9, 1918.
America was getting ready to join a war.
Many American men were joining up and training for war.
Soldiers burned tons of horse manure.
A windstorm spread the smoke.
Soldiers became ill.
107 cases the first day, 522 the first week, over 1000 by one month.
First wave of epidemic took place in military training camps in the Spring of 1918.
- As soldiers sailed to Europe to fight the First World War, they brought the illness with them.
Overcrowded conditions on ships caused it to spread.
Europeans fighting alongside Americans caught the disease.
Americans returning from the war in Europe brought the flu with them.
- The second wave began in the United States in September of 1918.
The worst months were September and October 1918
Finally died out by the Spring of 1919.

How They Suffered

I see hundreds of young, stalwart men in uniform coming into the wards of the hospital...every bed is full, yet others crowd in. The faces wear a bluish cast; a cough brings up the blood stained sputum. In the morning the dead bodies are stacked about the morgue like cord wood.

-A doctor describing conditions at Camp Devens

- Symptoms often began with sore throat and headache
- Quickly developed into:
 - Pneumonia with
 - Cyanosis

...it is simply a struggle for air until they suffocate.

Patients...died struggling to clear their airways of a blood-tinged froth that sometimes gushed from their nose and mouth.

- A doctor describing symptoms

Other symptoms included:

- Cataracts
- Enlarged spleen
- Purple blisters on blue, oxygen starved skin
- Bloody lungs

Often people felt the first symptoms, became severely ill and died within a few days. Sometimes people felt the first symptoms and died within hours.

Appendix G: Emergency Hospitals



Government and Citizens Respond

Government

- President Woodrow Wilson continued to focus on the war, sending more and more troops to fight and become ill.
- Mayors of major cities like Boston, New York City, Chicago, and San Francisco tried to following measures with little effect:
 - Many denied the reality of Spanish influenza until large portions of their populations became ill.
 - In many cities, citizens were required to wear facemasks.
 - Theatres and public meeting places were closed.
 - No public gatherings were allowed.
 - Some issued mass vaccinations of their residents, using bacterial vaccines.
 - Some smaller towns closed themselves to outside visitors.

Average Citizens:

- Wore facemasks.
- Stopped socializing with friends and family.
- Tried to flee areas of the countries where people were getting sick.
- Tried all kinds of folk cures.
 - Onion syrup poured all over the body.
 - Fourteen gins in quick succession.
 - A concoction of red peppers, chloroform, asparagus, kerosene and strychnine.
 - Bags tied around the neck, filled with goose grease and asafetida (a bitter, sticky material made from roots of a plant)

Numbers

- More than 1 Billion became sick worldwide, 21-40 Million died from the Spanish Influenza worldwide
- 25 million Americans got the flu, 670,000 died. More Americans died as a result of the flu, than died during World War I, World War II and the Vietnam War combined.

In some other Countries:

- In India, 17 million people died of the Spanish flu.
- In Great Britain, 200,000 people died of the Spanish flu.
- In Spain, 257,082 people died of the Spanish flu.
- In France, 400,000 people died of the Spanish flu.

Appendix J: Letter From Camp Devons

A Letter From Camp Devons, Massachusetts

Background: By now you know something about the influenza pandemic that swept the world in 1918. You are about to read a portion of a letter that was written by a doctor stationed at Camp Devons, a military base just west of Boston, Massachusetts. The doctor who wrote the letter was responsible for caring for sick soldiers who had come down with the Spanish flu. He wrote to his friend, who was also a doctor, on September 29, 1918. The entire letter can be found at the *Influenza 1918* website, a site which was based upon an episode from PBS's *American Experience*.

See <http://www.pbs.org/wgbh/amex/influenza/sfeature/devens.html>

Directions: Below you will find an excerpt from a letter written during the 1918 flu pandemic. Please read the entire excerpt, pausing to look at the definitions provided to you in the glossary that follows. Then answer the questions that appear at the end of the assignment. **Please answer the questions on a separate sheet of paper, and be sure to write complete sentences**

Camp Devons is near Boston, and has about 50,000 men, or did have before this epidemic broke loose. It also has the base hospital for the Division of the Northeast. This *epidemic* started about four weeks ago, and has developed so rapidly that the camp is *demoralized* and all ordinary work is held up till it has passed. All *assemblages* of soldiers *taboo*.

These men start with what appears to be an attack of *la grippe* or *influenza*, and when brought to the hospital they very rapidly develop the most *viscous* type of *pneumonia* that has ever been seen. Two hours after admission they have the *mahogany* spots over the cheek bones, and a few hours later you can begin to see the *cyanosis* extending from their ears and spreading all over the face, until it is hard to distinguish the coloured men from the white. It is only a matter of a few hours then until death comes, and it is simply a struggle for air until they suffocate. It is horrible.

One can stand it to see one, two or twenty men die, but to see these poor devils dropping like flies sort of gets on your nerves. We have been averaging about 100 deaths per day, and still keeping it up. There is no doubt in my mind that there is a new mixed infection here, but what I don't know. My total time is taken up hunting *rales*, *rales* dry or moist, *sibilant* or *crepitant* or any other of the hundred things that one may find in the chest, they all mean but one thing here--*pneumonia*--and that means in about all cases death.

The normal number of doctors here is about 25 and that has been increased to over 250, all of whom (of course excepting me) have temporary orders-- "Return to your proper station on completion of work"--Mine says, "Permanent Duty," but I have been in the Army just long enough to learn that it doesn't always mean what it says. So I don't know what will happen to me at the end of this. We have lost an outrageous number of nurses and doctors, and the little town of *Ayer* is a sight.

It takes special trains to carry away the dead. For several days there were no coffins and the bodies piled up something fierce, we used to go down to the *morgue* (which is just back of my ward) and look at the boys laid out in long rows. *It beats any sight they ever had in France after a battle.* * An extra long *barracks* has been vacated for the use of the morgue, and it would make any man sit up and take notice to walk down the long lines of dead soldiers all dressed up and laid out in double rows. We have no relief here; you get up in the morning at 5:30 and work steady till about 9:30 p.m., sleep, then go at it again. Some of the men of course have been here all the time, and they are tired.

**This is a reference to battles that took place during World War I. Some of the most destructive took place in France. World War I and the Spanish flu pandemic overlapped, and may have contributed to ending the war.*

Glossary

Assemblages - (noun) A gathering of people.

Ayer - (noun) A small town in Massachusetts located 35 miles Northwest of Boston.

Barracks- (noun) A set of buildings used to house soldiers.

Crepitant - (adjective) A crackling or popping sound.

Cyanosis - (noun) A bluish discoloration of the skin and mucous membranes resulting from inadequate oxygenation of the blood.

Demoralized - (transitive verb) To undermine the confidence of: dishearten.

Epidemic - (noun) An outbreak of a contagious disease that spreads rapidly and widely.

Influenza - (noun) An acute contagious viral infection characterized by inflammation of the respiratory tract and by fever, chills and muscular pain.

La Grippe- (noun) Another word for the Spanish flu.

Mahogany- (noun) A moderate reddish brown.

Morgue - (noun) A place in which the bodies of persons found dead are kept until identified and claimed or until arrangements for burial have been made.

Pneumonia- (noun) An acute or chronic disease marked by inflammation of the lungs.

Rales - (noun) An abnormal respiratory sound characterized by fine crackles.

Sibilant - (adjective) Of, characterized by or producing a hissing sound like that of (s) or (sh).

Taboo- (adjective) Excluded or forbidden from use.

Questions:

1. What does the doctor mean when he writes, "the camp is demoralized"?
2. How many people were dying per day, according to the doctor?
3. Describe in your own words, what happened to a patient who had Spanish Influenza?
4. Why were there 250 doctors with temporary orders to help patients at Camp Devons?
5. What was the hospital forced to do with all the dead bodies?
6. How do you think you would feel if you were a doctor in this situation?

What is Avian Influenza?

- A viral disease that causes illness in many species of birds. There are 15 known types of avian influenza, some of them are fatal to birds, some are not.
- Scientists have recently discovered that the Spanish Influenza pandemic of 1918 was caused by the avian influenza virus H1N1.
- H5N1 is the type of avian influenza causing concern today. Millions of migratory birds carry the disease. They pass on the virus to chickens, ducks, and other animals through droppings, feathers, and saliva.
- Humans caught H5N1 from birds after being in close proximity to infected chickens and ducks. Humans who are at the greatest risk of being infected are people who live and work closely with poultry in unsafe conditions.
- The virus is a new strain, for which the human body has little resistance. It also replicates easily. So far, it has not been found to easily jump from human to human. However, viruses mutate easily and rapidly. That is, they make copies of themselves that contain mistakes in their genetic reproduction. These new version could possibly have the ability to jump from human to human, making a pandemic possible.
- So far, 232 people have contracted H5N1 and 134 have died. 105 of the people who have died from H5N1 lived in Southeast Asia. Symptoms of H5N1 are similar to those experienced by people with Spanish Influenza.

Appendix L: Foot Soldiers



Appendix M:



Appendix N: Dangerous Liaison



Avian Influenza: Will History Repeat Itself?

Final Assignment: Brochure for Travelers to Southeast Asia

In order to better prepare yourself and others who might plan to travel to Southeast Asia, you are going to create a travel brochure on H5NI. Your brochure must have the following:

1. **Appropriate Layout:** Your brochure should be the size of an 8 ½ x 11 size paper. The brochure should fold in thirds. You will need to fill six sides with information.
2. **Colors, images and text:** Your brochure should be full color and must include at least 3 images. Your text must be typed or written in legible handwriting.
3. **Accurate information:** Your brochure should be accurate and offer the following information:
 - a. Background on the 1918 influenza pandemic
 - b. A description of H5N1, how it is spreading and what is being done about it.
 - c. A description of the impact of H5N1 upon the peoples of Southeast Asia. This should discuss the customs in Southeast Asia which allow avian influenza to spread
 - d. What things one shouldn't have to worry about when traveling in Southeast Asia and what kinds of things one should avoid while traveling in Southeast Asia.

Resources

The following resources may be helpful to you:

1. The World Health Organization Regional Office for South-East Asia <<http://w3.who.sea/en/Section10/Section1027.htm>>
2. Center for Disease Control and Prevention website. <<http://www.cdc.gov/flu/avian>>
3. Influenza 1918: The Worst Epidemic the United States Has Ever Known. PBS American Experience. Website <<http://www.pbs.org/wgbh/amex/influenza/>>.
3. World Health Organization Epidemic and Pandemic Alert Response: Avian Influenza. <http://www.who.int/csr/disease/avian_influenza/en>