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A Minuscule Adversary: Combating Epidemics and Infectious Diseases in America

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From SARS to avian flu to the current escalating outbreaks of swine influenza (H1N1), it has become increasingly clear that we are risking a major catastrophe unless we act to restore the safety net.

-- Deborah Burger, the co-president of the California Nurses Association/National Nurses Organizing Committee. ¹

These are, in effect, 47 million "Typhoid Marys" of the next pandemic--at risk themselves and to their families and neighbors.

-- Irwin Redlener, director of the National Center for Disaster Preparedness at Columbia University's Mailman School of Public Health. ²

Infectious diseases have occurred without warning throughout history and millions of people have lost their lives because of these epidemics and pandemics. As the nineteenth century came to a close, scientists, with assistance from government funding and private philanthropy in Europe and the United States, had investigated viruses and bacteria and conducted scientific research in order to better help society combat disease. Despite the many advances, scientists and the federal government have not always been able to stop an infectious disease from devastating its fellow citizens during the twentieth century. In 1900, the Barbary

Plague attacked Victorian San Francisco, CA, and the public health system needed to find the source of the plague and stop its spread among the citizenry. By the close of World War I, a deadly strain of influenza virus surfaced in Haskell County, Kansas, and when it concluded its advance, over 100 million people lay dead in its tsunami-like wake. In the early 1980s, homosexual communities and drug users across America were first infected with HIV, and eventually, the virus extended beyond the aforementioned districts. By 2007, over half a million Americans had died from HIV/AIDS from all socio-economic, racial, religious and gender backgrounds. This unit will explore the various efforts made by social institutions to combat epidemics and infectious diseases during the twentieth century. It will also require students to answer several essential questions, analyze primary sources to illustrate how Americans, the federal government and religious leaders reacted to epidemics in the United States.

This unit will be guided by several essential questions:

How do infectious diseases arise and spread?

What is the role of the United States government in protecting citizens against

epidemics?

How has the federal government confronted the possibility of infectious diseases

devastating Americans?

What is the mission of the United States Public Health Service (PHS) and the

Centers for Disease Control and Prevention (CDC)?

How are these two organizations funded?

How did these institutes combat infectious diseases during the twentieth century?

During an epidemic, who takes responsibility of protecting a diverse population

that may resist assistance or not trust federal officials?

How does the individual react to infectious diseases?

For a list of the city-wide curriculum standards in science and social studies in New Haven, please review Appendix A at the end of the unit plan.

As the recent H1N1 flu virus illustrates, the menace of a world-wide pandemic in our global economy is clearly a threat. Global trade and travel allow viruses to spread at an unprecedented rate in history. In three months, H1N1 has proliferated across the globe and has killed people everywhere.

In the United States, there are nearly 47 million Americans without health care and at risk for being exposed to the virus without the ability to pay for a vaccination. How would uninsured Americans become vaccinated for the virus? Would the American health care system be able to assist so many uninsured citizens? Who would pay for the vaccinations and care for the sick and dying? By the end of the unit, students will be able to take a position and support it with historical evidence on the federal government's role in protecting its citizens.

Rationale

The purpose of this unit is to allow students to explore epidemics and pandemics, and connect historical research to further enhance their knowledge and ignite intellectual curiosity. The entire project will focus on the research process in order to prepare students for the demands of college writing. Specifically, the unit requires students to synthesize scientific knowledge, historical inquiry and current events. Students will explore and analyze primary and secondary sources as well as scientific data acquired throughout the unit to understand infectious diseases and its impact on American history. The unit will be centered on the following essential question: How have the federal government and individuals confronted the possibility of infectious diseases devastating their culture and population?

I teach social studies in an urban magnet arts high school. We have students from the city of New Haven and surrounding suburban communities with a very diverse student body from all socio-economic, racial and religious backgrounds. Every scholar studies an art (dance, music, chorus, visual arts, theatre or creative writing) and must earn three social studies and science credits in order to graduate. As seniors having fulfilled their requirements to graduate, many students take an elective course in social studies or science to continue their interest. In organizing this unit, I envisioned working closely with a science teacher to illustrate how interdisciplinary learning works. The lessons will be coordinated with the science curriculum in Biology as well as Anatomy and Physiology and will be taught in Civics to students during the second marking period.

Equipped with the latest technology in our school, teachers will use PowerPoint presentations to provide information and guide instruction and students will examine primary sources in photographs, letters, government reports and newspaper articles. In order to "hook" students on individual lessons, primary and secondary quotations will be provided and students will be required to analyze the statements at times. I have included examples of quotes throughout this unit for teachers to use as Do Now! assessments and in their PowerPoint presentations.

Students will learn and increase their content vocabulary and study how infectious diseases have influenced history. Throughout the lessons of the unit, students will employ critical thinking to synthesize historical events with current events in order to make educated decisions affecting all people. Students will debate the role of the federal government, public health officials and the scientific community in studying infectious diseases and preventing its spread. At the conclusion of the unit, students will write an essay answering the following essential question: Is the United States health care system equipped and capable of combating an infectious disease and protecting its citizens' lives?

Lessons and Objectives

Students will explore the history of paradigm shifts in medical knowledge.

To open the unit, I will begin with a Do Now! writing assignment around two philosophical questions that humans have asked themselves for centuries: What do I know about life? And how do I know it? ³

I will ask the students to think about the two questions and write down their thoughts for about 15 minutes. Of

course, the questions are challenging and some students may need guidance in organizing their answers. After everyone has written at least a paragraph in response, I will ask for volunteers to read their answers to the entire class.

Afterwards, a PowerPoint presentation will focus on a short history of medicine. First, the students will require some key vocabulary to increase their knowledge (please see Appendix B).

Next, a short presentation of historical figures in the field of medicine, and the paradigm changes in knowledge will be introduced. In ancient Greece, Hippocrates, a physician, taught his craft to many and hypothesized how disease affects the human body. He is considered the father of modern medicine and is venerated for his ethics in the discipline (Hippocratic Oath). Hippocrates believed that people should observe nature, but he did not probe it further for evidence and produced theories based on observations. ⁴To the Greek mind, one would never probe the human body in detail in order to prove their observations in a modern scientific method. Only reason was necessary to prove a hypothesis. ⁵The Greeks believed that there were only four kinds of bodily fluids: blood, phlegm, bile and black bile. And employed this paradigm principle to make conclusions on disease and guide treatments. For six hundred years, Hippocrates and his ideas were the dominate paradigm in medical treatment.

A minor paradigm shift in medical knowledge occurred with the teachings of Galen, a Roman philosopher and physician in the second century A.D. Unlike Hippocrates, Galen dissected animals and performed autopsies on humans. ⁶His works and theories dominated medical knowledge in both Western Civilization and the Arabic world for centuries. Galen's work *That the best Doctor is also Philosopher* challenged the conviction that doctors are most interested in profit and that the best doctors are devoted to healing. When he served as a surgeon in the Roman army, Galen examined wounded Gladiators and developed his theories on anatomy. Like Hippocrates, he believed that illness was a result of "an imbalance in the body" and a physician could correct that imbalance. ⁷One theory that both Hippocrates and Galen advocated, and many doctors followed for centuries, was the practice of bleeding patients to cure diseases.

Even though the Hippocratic-Galen ideology dominated medical practice for centuries, other theories entered the market place which emphasized experience and empiricism.

It is impossible to summarize all these theories in a few sentences, yet nearly all of them did share certain concepts: that health was a state of equilibrium and balance, and that illness resulted either from an internal imbalance within the body, or from external environmental influences such as an atmosphere miasma, or some combination of both. ⁸

Students will explore the impact of the Renaissance and the Protestant Reformation on scientific

and medical knowledge.

By the fifteenth century, the Renaissance had changed European culture, art, economics and politics. Scholars embraced new ideas and cultural attitudes, including humanism, which emphasized the study of worldly subjects not just the holy doctrine of the Catholic Church. Intellectuals began to seek evidence to prove their theories and challenge long-accepted paradigms. Nicholas Copernicus challenged the accepted principle that the earth was the center of the universe and stated that the sun was the actual focal point of the cosmos.

In medicine, three men promoted new ideas for doctors to explore and practice their craft: Paracelsus, Vesalius and Fracastorius. Paracelsus felt that doctors should no longer just observe nature, but investigate it and prove it through experiment and reasoning. ⁹ Vesalius "dissected humans and concluded that Galen's findings" were error filled and based upon animal not human anatomy. ¹⁰ And Fracastorius "hypothesized that diseases had causes and passes from one thing to another." ¹¹

In 1605, Francis Bacon proclaimed that Aristotle was a slave to logic and that the Greek philosopher's ideas were nearly useless. ¹² Bacon also declared that "The logic now in use serves rather to fix and give stability to the errors which have their foundation in commonly received notions than to help the search after truth. So it does more harm than good." ¹³ Some scholars in the medical field began to go beyond observation and seek evidence to prove their theories during the Reformation.

By the eighteenth century, many advances in theories changed the way doctors and scientists explored medicine. Edward Jenner immunized people against smallpox using the cowpox virus. Despite the revolutionary breakthrough, Jenner's greatest gift to medicine was his meticulous methodology. ¹⁴ Unfortunately, some doctors did not approve and implement Jenner's new concepts.

But if the first failing of medicine, a failing that endured virtually unchallenged for two millennia and then only gradually eroded over the next three centuries, was that it did not probe nature through experiments, that it simply observed and reasoned from observation to a conclusion that failing was--finally--about to be corrected. ¹⁵

At the height of the Gilded Age in the United States, the federal government had no oversight board or standards for entry into the medical industry as a doctor. The leading schools in the nation only had one requirement for entry: financial. If a student could afford the class, the program welcomed him into it. And in order to graduate, the standards were so low that passing half of the classes earned a degree. Also, many of the programs were not based upon scientific methods and did not even have functioning laboratories for students. The leading schools in Europe far exceeded those in the United States and some medical students went abroad to learn their trade, including William Henry Welch, who became the foremost pioneer in medical scientific research in America.

It was a typical good American medical school (College of Physicians and Surgeons in New York), with no requirements for admission and no grades in any course. As elsewhere, faculty salaries came directly from student fees, so faculty wanted to maximize the number of students. Instruction came almost entirely through lectures; the school offered no laboratory work of any kind. ¹⁶

At the dawn of the twentieth century, Welch had advanced his career in the field and headed Hopkins Medical School in Baltimore, MD., assembling the best talent and conducting the preeminent research in the nation. Medical advances and paradigm shifts in scientific inquiry and research enabled the United States to combat three viruses that attacked the population and tested the resolve of the federal government to deal with the new challenges.

Students will discover what a virus is and how it spreads and explore the definition of epidemics and pandemics.

The second lesson of the unit will be taught in conjunction with a science teacher. It will begin with identifying infectious diseases and how viruses spread. The students will discover evolutionary biology and its impact on viruses.

To open the unit, students will be asked to write down three possible ways in which disease spreads among animals and humans. While guiding the exploratory discussion, the teacher will go around the classroom and write the students ideas on the board. Afterwards, the teacher will use a PowerPoint presentation to define epidemics and pandemics and illustrate the basic structure of a virus. To evaluate the end of the lesson, students will be asked to identify any infectious diseases in their community today with an Exit Ticket.

Students will examine the roles of the CDC and PHS in protecting citizens and identify the World Health Organization.

The following lesson will focus on the role of the CDC and PHS. Students will be instructed to go on the internet and search for the federal government web sites that discuss the aforesaid organizations. A worksheet will guide the students through the sites and allow them to answer significant questions regarding infectious diseases and epidemics. To conclude the afternoon, students will be asked to summarize the two departments and both of its roles in protecting Americans.

1. List four historical items you learned from your research.
2. How are the CDC and PHS funded?

3. Who is the head of both organizations currently?
4. What is the primary role of the WHO and how does it receive funding?

Students will examine the Barbary Plague during Victorian era San Francisco.

Now that the students have some basic information on epidemics and pandemics, the teacher will focus on the historical impact of diseases in American history. A Do Now! question will guide the opening salvo of the lesson: In your opinion, how does culture and beliefs influence your families' medical decisions and perspective on disease? A Socratic discussion of cultural beliefs surrounding disease will follow the Do Now! assessment.

A PowerPoint lecture will initiate the lesson with background information on the Barbary Plague at the turn of the twentieth century. Students will discover how the plague worked its way from China to San Francisco and how the Asian community and the citizenry handled the disease. The following essential questions will guide the lesson: How did racism play a role in the reaction of Chinatown's citizens to the quarantine? How did the Chinese react to federal officials entering its district?

The preceding historical information may be used to develop a PowerPoint presentation for the class on the Barbary Plague. In 1900, the plague arrived in San Francisco on the *Australia* and came into the city when contaminated rats jumped ship and entered the sewer system. The government responded by sending Dr. Joseph Kinyoun, who immediately diagnosed the disease and quarantined Chinatown, to San Francisco. By May of 1900, Kinyoun became the focus of Chinese scorn over the plague, and Chinese citizens, with the backing of the Chinese Six Companies, refused to submit to the demands of compulsory relocation or vaccination. The Chinese press dubbed Kinyoun the "wolf doctor" and gathered in the streets to protest the government's attempt to halt the plague. The merchants in Chinatown closed their shops to protest. ¹⁷

The following quote will be presented to the students to evaluate and respond to in class.

The city was a hostile territory for those of Chinese descent. When young men of Chinatown offered to join the army of their adopted land, the local press mocked their offer with cartoons of pigtailed enlistees...Now came these draconian plague-control measures and an order from the U.S. government to submit cheerfully. ¹⁸

Finally, Kinyoun ordered a restriction of all travel of plague patients and no train or boat voyage by all "Asians liable to the disease." ¹⁹ The Chinese did not submit to the orders and went to the courts to lift the ban. A toxic blend of federal and local health officials and civil rights claims left the decision in the courts hands. Judge

William W. Morrow ruled in favor of the Chinese as Kinyoun, and the health department did not provide significant evidence to single out Chinese citizens in the order authorized by President William McKinley. However, by the end of the month, D.D. Cowley of the California State Health Board ordered that Chinatown be quarantined immediately. Angry Chinese citizens did not react in a docile manner and two riots erupted in early June. Unfortunately, Kinyoun's lack of diplomatic aptitude failed to resolve the crisis and many citizens in the community believed that Kinyoun was an alarmist and possibly a racist. "In court, the Chinese relentlessly pounded away at the theme that the quarantine was an act of racial bias, not public health." ²⁰

One of the major economic hubs along the West Coast of the United States, public officials and business leaders in San Francisco worried about the impact of plague on trade and ignored some of the warnings of the public health officials. And some city government leaders also began to mislead federal officials in an attempt to not disrupt trade or commerce in San Francisco.

Refusal to yield bodies, false death certificates, patients coached to keep silent--it was all part of the daily game of resistance played by state doctors, and it had Governor Gage's fingerprints all over it. ²¹

Also, many different ethnic and cultural beliefs played a major role in the dissemination of information to the public. Chinese papers and the Chinese Six Companies, vexed over the possibility of racism after the Chinese Exclusion Acts in the 1882, did not trust the federal government and refuted statements of the plague and its spread among the citizenry.

The Chinese government installed a new consul general in San Francisco. The new consul tried again to ban autopsies in Chinatown as a racist practice. The public health doctors refused, ruling that the victim of any suspicious death--irrespective of race--had to undergo a postmortem examination to rule out the possibility of plague. ²²

At one point during the epidemic, the Highbinders (a Chinese gang) attempted to snatch a Chinese translator, Wong Chung, because he assisted the Marine Hospital service. ²³ Luckily, the assailants failed to grab Chung and the state department safeguarded Chung after secretary of state John Hay asked for assistance in

protecting federal Chinese employees.

For homework, the students will be required to go on-line and search for primary source documents from the Barbary Plague. Students can print articles from newspapers in San Francisco between 1900 and 1908, search for personal letters from family victims or discover any health official's documents or letters.

Students will examine the role of Dr. Rupert Blue in protecting the public and containing the plague.

To open the next lesson, the students will work in groups of three or four to share their primary source documents. The teacher will walk among the students and guide the examination of the documents. Each group must select the most interesting or informative piece and chose a leader to summarize the document to the class. Another member of the group will write notes on the board as the documents are reviewed for the rest of the class. The synopsis must include the author's name, date and key points made in the text.

A lecture will follow the group discussion and informational session. In 1902, the plague had spread beyond Chinatown and a second white patient had died of the disease. Now, the city searched for the origin of the disease and placed traps to accumulate animals in order to hunt for the source. Within a very short time, the city had discovered 16 rats infected with the virus. After three years, the plague still lurked in the city and a new federal veteran, Rupert Blue, was brought in to take control over the search. His first priority was "to clean up the plague houses and clear out rat refuges."²⁴ Traps would be built to kill rats, the streets washed and the sick and dead would now be inspected by the public health service. The cleanup of Chinatown included cleansing, exterminating and remodeling in an attempt to eradicate the germs. Blue also attacked the rat population with poisoned meals. By February of 1905, 121 cases of plague had been identified, 113 deaths had occurred, and Blue was relieved of his duties as it appeared the epidemic was finally over.

Unfortunately, the plague would awaken from its slumber over a year later when the Earthquake of 1906 struck the city of San Francisco. The natural disaster devastated property and left thousands of citizens homeless. Relief money poured into the city from around the country. By June, refugee camps had been erected and thousands lived in tents and dugouts.²⁵ The earthquake also forced thousands of rats from hiding and they now lived among the camps with the people.

Resourceful camp followers, the rats slowly made their way to the refugee camps. They flourished in the ruins, feasted off the garbage, and bred in abundance. The rodent diaspora set the stage for a new and unexpected aftershock of the earthquake.²⁶

However, the plague differed from its predecessor earlier. It now hit the city beyond the streets of Chinatown and assaulted citizens of all races. Blue returned to continue his work and became entranced by the link

between people, rats and fleas. He concluded that the rats were the "agents" of the epidemic as insects hid on their pelts with the disease. Blue assailed the rats with a renewed sense of purpose. By the end of 1907, 136 people had been diagnosed with plague and 73 died. ²⁷

Blue had learned from previous mistakes and enlisted the populace of San Francisco to assist in the termination of the rats. Businesses supported the Citizen's Health Committee and over half a million dollars was raised to combat the challenge. Blue inspected Butchertown, cleaned the stables and chicken yards and analyzed grocers all in an effort to stop providing rats with a smorgasbord of meals from leftovers in trash. And women's clubs boycotted establishments that did not conform to the new standards of the health department. In the end, San Francisco's food organizations cleaned up their places of business and possibly a million rats were killed. When the efforts of the entire city were concluded, Blue was hailed as the "Pied Piper" ²⁸ for his toils, and by the end of 1908, the plague was finally over.

For their homework assignment, students will be required to write a letter to the editor of their local newspaper summarizing the importance of community health standards and federal laws to ensure cleanliness in restaurants. In order to assess the students understanding of the Barbary Plague in San Francisco, historical evidence from the lessons must be incorporated in the letter.

Students will examine the Great Influenza in a photo exhibit.

To open the next lesson, students will examine photographs from the Great Influenza in the United States. Teaching at a school with visual artists and creative pupils, our learners are very proficient at looking at pictures, primary sources and artwork from historical events. My pupils analyze a variety of sources and jot down their opinions and perspectives on a regular basis.

Students will dissect pictures of hospital beds with infected victims, citizens with protective masks on in major cities and the graves of mass burials of the dead. Students will write down their initial reactions and thoughts from the photos and will be led in a group discussion. Searching the web for photos from the Great Influenza in America, a PowerPoint presentation is effortlessly put together.

The following primary photographs were found on the web through Google images:

An emergency hospital at Camp Funston, Kansas, is packed with patients felled	by the 1918 influenza epidemic.
With a nation fighting a world war, the influenza virus raced through U.S. military	camps like Fort Porter, New York.
Public gathering places were ordered closed by the leaders of many major cities.	
Police officers wearing masks.	
Children waiting in a food line to be served by women with masks.	
A photograph from May 29, 1919 shows rows of tents in Lawrence,	Massachusetts where victims of the influenza pandemic were treated.
Trolley car with Spit Spreads Death sign.	
At Mare Island in San Francisco, bed sheets were hung in barracks to protect	healthy men from breathing on each other.

A worksheet with a corresponding number for each photograph will be provided to all the students. I usually break the students into pairs and have them compare notes on each picture. After about 15-20 minutes, the students will be asked to volunteer their thoughts to the class. Students enjoy sharing their perspectives on the photographs and a lively conversation nearly always takes place. To conclude the discussion and lesson, I provide the students with an Exit Ticket and have them identify their reaction to the pictures in two to three sentences.

For homework, students will be required to search the web for estimated deaths in the United States and Europe from the Great Influenza. A worksheet will ask the students to identify the approximate deaths in the United States, Germany, France, England and Russia.

Students will examine the social impact and the response to the pandemic by Public Health Officials.

To open the lesson, the following quote from The Great Influenza will be placed on the screen in a PowerPoint.

One nurse at Great Lakes would later be haunted by nightmares...She remembered that at the peak of the epidemic the nurses wrapped more than one living patient in the winding sheets and put toe tags on the boys' left big toe...She (also) remembered bodies 'stacked in the morgue from floor to ceiling like cord wood.' In her nightmares she wondered 'what it would be like to be that boy who was at the bottom of the cord wood in the morgue. ²⁹

Providing the students with about four minutes to digest it, I will ask volunteers to respond and share their thoughts with the class. Afterwards, we will go over the homework from the previous evening and put some death totals on the board for the entire class to inspect.

Next, students will read reports from William Henry Welch and Dr. Blue in regard to the possible influenza virus in the United States and letters from victims and family members of the pandemic. There are hundreds of primary sources on the Internet that can be printed and handed out to the students in groups of three. Each group will answer the following questions:

1. What were the reactions of citizens and public health officials to the epidemic?
2. How did Americans respond to the disease?

3. How did the federal government attempt to stop the spread of the disease?
4. What are your thoughts about the document?
5. List four historical items you learned from the document.

After the pupils complete the assessment of the document, groups will be asked to report their finding to the class.

For homework, students will be required to create a bar graph in an Excel file with the total deaths in the United States and Europe (France, England, Russia and Germany) from the pandemic in 1918-1919. Students will also look at the total number of deaths from battle during the Great War and compare the two numbers in charts.

Students will examine the documentary *Influenza 1918* by PBS.

To open the lesson, the following quote from *The Great Influenza* will be placed on the screen in a PowerPoint.

Colonel Gibson, commander of the Fifty-seventh Vermont, wrote of his regiment's experience on the Leviathan: 'The ship was packed... conditions were such that the influenza could breed and multiply with extraordinary swiftness... The number of sick increased rapidly, Washington was appraised of the situation, but the call for men for the Allied Armies was so great that we must go on at any cost...Doctors and nurses were stricken. Every doctor and nurse was utilized to the limit of endurance...Groans and cries of the terrified added to the confusion of the applicants clamoring for treatment and altogether a true inferno reigned supreme. ³⁰

Once again, the students will have about five minutes digesting the excerpt as their Do Now! assessment, and I will ask volunteers to respond and share their thoughts with the class.

Using the teachers guide from the PBS web site, a worksheet will be provided for the students to take notes during the documentary. Students will be required to write down four new historical items they learned while watching the film. Also, students will be asked to write down factors that might have contributed to the spread of the disease. When the documentary is concluded, two columns will be placed on the board: "Factors contributing to flu spread" and "Actions of public health officials." ³¹ The teacher will complete the lists from

the students' notes.

For homework, students will complete the following worksheet:

1. What do you think should have been done to try to control the disease's spread?
2. Why do they think these actions were not taken?
3. What do you think the impact of it was on those who lived through it?
4. How does the federal government balance individual rights and the public welfare?

Students will examine the AIDS virus and its impact on American society.

Once again, I will work closely with the science instructor developing a PowerPoint presentation to explore the AIDS virus. HIV is a retrovirus that replicates and unfolds slowly. A robust enemy, HIV can be dormant in a host body for years and hide in a cell's DNA without affecting the host or other cells. ³² HIV mutates at an accelerated rate (100,000 faster) compared to most viruses. "At such ferocious rate of mutation, the virus was able to adapt to potential vaccines and antiviral treatments much more quickly than could other viruses, and thus was far more difficult to annihilate." ³³ Amazingly, HIV adapts so quickly that it often progresses and evolves against any drugs placed in the human body to destroy it. Luckily, the virus was not capable of spreading by airborne passage and only proliferates through certain sexual contact and blood exchanges. ³⁴

With the ability of the virus to multiply in the aforementioned methods, homosexual and intravenous-drug users in America were the first two groups of people to be assaulted by HIV. By June of 1981, the CDC in Los Angeles recorded five homosexual men who had died of a rare pneumonia, and by 1982, nearly 600 cases had been reported, doubling the epidemic every six months. ³⁵ AIDS (or GRID: Gay-related immunodeficiency) attacked New York City and San Francisco citizens 10 times faster than any other part of the country in the early 1980s.

I found myself bedridden with a cold that wouldn't go away, viral bronchitis, fever, diarrhea, loss of appetite, and extreme fatigue, wrote one early GRID victim. Then I developed chronic ear infections, shingles on the back of both legs, and a persistent sore throat. Described another: Low-grade fevers, generalized lymphadenopathy, and thrush. Weight loss: fifty pounds! Pain, unexplained pain in my limbs, headaches, nausea, and unexplained diarrhea for seven months. ³⁶

For homework, the students will be asked to research how HIV mutated and jumped into human hosts. Early in the pandemic, many theories attempted to answer the question, and in the long run, proved inaccurate. It is imperative that students search the web using legitimate sites as resources to complete the assignment. The pupils must write down the web address and the organization that provided the information. The following day I will guide a class discussion of the students' research.

Students will examine the impact of AIDS on American citizens.

To open the lessons on AIDS, I will provide photographs of famous Americans who have died of AIDS or have contacted the disease in a PowerPoint presentation. Some of the celebrities who have contacted the HIV virus are Magic Johnson, Greg Louganis, Arthur Ashe, Rock Hudson, Freddie Mercury and Robert Reed.

Students will be shown paintings from AIDS activist Keith Harring. On the web, the Keith Harring foundation (www.harring.com) posts excellent copies of his work. In 1988, Harring was informed that he had the AIDS virus and died of complications from AIDS at the age of 31 in 1990. During the last years of his life, he devoted his time to make the public aware of the disease and spoke about his own struggle with AIDS.

The students will also view pictures of the AIDS quilt. The Names Project Foundation has a terrific web site devoted to the AIDS memorial quilt (www.aidsquilt.org) and provides students with a perspective of the social impact of the disease. The AIDS Memorial Quilt is a poignant reminder of the many Americans who have lost their lives from the virus and the impact among families across the country.

As the students examine the celebrity photographs, Harring's artwork and the AIDS quilt, they will be asked to write down their thoughts. The students will also be required to write down three facts that they know about the AIDS virus. Afterwards, small groups will be formed and the students will share with each other their thoughts. Finally, the teacher will ask each group to write down two items on the board about their knowledge of AIDS.

For homework, students will be required to research the number of deaths in the United States, Africa, Europe, India and China from the AIDS virus in the twentieth century and to graph those totals in a bar graph in an Excel spread sheet.

Political ideology drives the public debate over AIDS.

As the HIV virus spread across the country and the number of casualties increased, Americans sought answers to the epidemic. How was HIV spread? Why were homosexuals being killed at such a high rate? Unfortunately, fear drove some ideological answers, and some leaders jumped to conclusions without scientific evidence to support their statements. Two positions arose in the intellectual marketplace that attempted to provide answers to AIDS and its victims. In order to guide the students understanding of the debate, I will provide quotes on both sides of the aisle that illustrate the argument.

Conservative Statements:

Eugene Clark, a Catholic Theologian, stated that "promiscuous sodomy is the root cause" of turning a viral attack into a modern plague, and that sodomy was simply at odds with Christian teachings. "There is a body of Judeo-Christian thought regarding homosexuality. Sodomy is not a

birthright. Like adultery and running a red light, it is a voluntary act. And like them, it has consequences." ³⁷

Ex-White House staff member Pat Buchanan claimed in 1983 that "The poor homosexuals. They have declared war on nature and now nature is exacting an awful retribution." ³⁸

In 1987, the Rev. Jerry Falwell proclaimed that "AIDS is God's punishment...The scripture is clear. We do not reap it in our flesh when we violate the laws of God." ³⁹

Liberal Declarations:

HEW Secretary Margaret Heckler felt that AIDS was her "top priority. The person with AIDS is bearing a very heavy burden. We ought to be comforting the sick rather than afflicting them and making them a class of outcasts." ⁴⁰

"AIDS has provided a green light to bashers and bigots. It's a convenient excuse for those who hate us," stated Kevin Berrill of the National Gay and Lesbian Task Force. ⁴¹

The message of love and tolerance for the disease's victims rippled throughout mainstream Christianity. "You don't have to endorse the homosexual life style to agree that it's a terrible idea to turn AIDS victims into social lepers," wrote a guest columnist in the Christian Science Monitor. One group of communal volunteers cited Christian teachings that compelled them to care for an AIDS-afflicted neighbor. "The book of Matthew says you take care of your neighbor, so we've decided to take the risk." ⁴²

After examining the quotes, I will conduct a Socratic seminar lesson based upon the ideological perspective of Americans. To help move the debate, the following questions may be used to get students sharing and debating their thoughts.

Should political ideology drive scientific research? Why or why not?

How should financing for scientific research be funded? Private corporations or federal grants?

Should religious doctrine influence politicians' decisions? Why or why not?

Can public health decisions by individuals and the federal government be separated from personal beliefs?

How do individuals with different perspectives resolve their differences?

For homework, students will be expected to synthesize the days lessons after the Socratic seminar discussion. The pupils will research the role and policies of Surgeon General C. Everett Koop during the Regan Administration and the AIDS crisis during the 1980s. In a well-constructed paragraph, students will respond to the following writing prompt: Do you agree with the actions of C. Everett Koop during the AIDS crisis? Take a position and support your conclusion with evidence from your research.

Students will investigate the film Philadelphia.

To gain a better perspective on the cultural impact of AIDS on American society during the 1980s and 1990s, students will watch Philadelphia and complete a written assignment at the conclusion of the film. In the state of Connecticut, all sophomores must take the CAPT exam and become familiar with the requirements of the state standards for success. One part of the test requires students to read and examine a piece of fiction and write an open-ended response. In my classes when students watch documentaries or films, I always provide the pupils with a Response to Film (or documentary) worksheet. The following questions would be on the worksheet for students to complete.

Response to Film questions:

1. List four historical lessons you learned about AIDS and American society that you think are important.
2. What are your thoughts and questions about the film? You might reflect upon the characters, their problems, the title or other ideas.
3. Describe the impact of the AIDS virus on the health of Andrew Beckett (Tom Hanks) both physically and emotionally.
4. Do Americans with a crippling or infectious disease deserve the same Civil Rights protections as other citizens?
5. What should the role of the federal government be in such cases?

Students will analyze and summarize the ability of the federal government and public health departments to protect its citizens.

For a final assessment of the students' knowledge and understanding of the unit, a well-research MLA-style essay will be assigned. According to district standards (see Appendix C), students should be able to take a position on an essential question and support it with evidence.

Unit Essential Question:

Is the United States health care system equipped and capable of combating an infectious disease and protecting its citizens' lives?

Students should investigate the recent H1N1 virus, and the response of the CDC to inform the public of its broadening reach in the country. In order to answer the essential question, the learners must use evidence from the lessons in the unit in order to synthesize a conclusion.

Appendix A: Implementing District Standards

Curriculum standards for the City of New Haven

Science Standards: 10th Grade (Biology)

- 1. Cells, Bacteria and Viruses
 - a. Describe the similarities and differences between bacteria and viruses.
- 2. Genetics and Evolution
 - a. Describe the general role of DNA and RNA in protein synthesis.
 - b. Describe how structural and behavioral adaptations increase the changes for organisms to survive in their environments.
- 3. Diseases and Populations
 - a. Describe the difference between genetic disorders and infectious diseases.

- b. Describe how bacterial and viral infectious diseases are transmitted.
- c. Explain the roles of sanitation, vaccination and antibiotic medications in the prevention and treatment of infectious diseases.

Social Studies Standards in New Haven: Grade 11 (United States History II)

1. Gather historical data from multiple sources.
2. Recognize primary and secondary sources.
3. Identify and analyze various causes and consequences of events.
4. Take a critical stand on current issues and defend a position on that issue.

Social Studies Standards in New Haven: Grade 12 (Elective Courses)

1. Demonstrate understanding through written, verbal, visual and/or technological formats.
2. Use the writing process (pre-writing, drafting, revising, editing, and publishing) to complete at least two written pieces.
3. Gather historical data from multiple primary and secondary sources.
4. Read about and discuss current events.

Appendix B: Content Vocabulary

Axiom: universally accepted principle or rule; a proposition that is assumed without proof for the sake of studying the consequences that follow from it.

Epidemic: a widespread outbreak of an infectious disease; attacking or affecting many individuals in a community or a population.

Epidemiology: the branch of medicine dealing with the incidence and prevalence of disease in large populations and with detection of the source and cause of epidemics of infectious disease.

Pandemic: epidemic over a wide geographical area; occurring throughout a region or even throughout the world.

Paradigm: A set of assumptions, concepts, values, and practices that constitutes a way of viewing reality for the community that shares them, especially in an intellectual discipline.

Pathogen: An agent that causes disease, especially a living microorganism such as a bacterium or fungus.

Appendix C: Implementing District Standards

CAPT-ESSAY Rubric: Interdisciplinary Writing Rubric and Standards

1. Taking a Position: Introduction with a thesis statement.
2. Support position with Evidence (or Concrete Details)
Use Accurate and Relevant Information from more than one source.
3. Organization: 5-paragraph essay
4. Clarity and Fluency: Expressing Ideas and Proper Grammar
5. Holistic Score

Appendix D: Deaths from Infectious Diseases in the United States

Barbary Plague: 113 deaths by 1904 and another 73 by 1907

Influenza: 650,000 deaths in United States and 50-100 million worldwide

AIDS: By 2000, AIDS killed 21.8 million people and 50 million carried the HIV virus. ⁴³

Annotated Bibliography

Chase, Marilyn. *The Barbary Plague: The Black Death in Victorian San Francisco*. New

York: Random House, Inc., 2003.

Marilyn Chase's volume not only examines plague, but it is also a social, cultural and political history of San Francisco at the turn of the 20th century. After rats brought the disease from China, the virus first struck the Chinese. The white establishment wrongly figured they could stamp it out without considering cultural differences. Chase illustrates the official conspiracy--including the city's press--that not only kept information from the public, but actively misled San Franciscans. In the end, she demonstrates that the crusade to rid San Francisco of plague was won by diligence, discretion and distribution of the facts to the public.

Barry, John. *The Great Influenza: The Story of the Deadliest Pandemic in History*. New

York: Penguin Books, 2005.

John M. Barry researches the Spanish influenza pandemic of 1918 in extraordinary detail. Barry investigates how medicine was practiced by the Greeks and Romans and medical theory advanced over time. In the United States at the end of the 19th century, there was little governmental oversight or national standards for the profession. After the United States finally entered World War I, soldiers were placed into overcrowded training facilities that were less than sanitary. Once the flu first broke out in a Kansas army barracks, it was quickly transferred to other encampments when soldiers transferred by train across the country. It easily vaulted into major cities, decimating large numbers of American citizens. When these soldiers went overseas, the flu went with them. Being especially contagious, it swept the globe in short order and left, by estimates, between 50 and 100 million dead. Barry has produced a massive and important work of epidemiological history which is, at the same time, as readable as a thriller.

Engel, Jonathan. *The Epidemic: a global history of aids*. New York: HarperCollins

Publishers, 2006.

Jonathan Engel's work is a well-written and fascinating geopolitical history of AIDS. He puts a human face on a worldwide pandemic. The discussion of the social, political and ideological construct surrounding the epidemic is exceptionally mesmerizing. Dr. Engel's research is comprehensive, and his methodical exposition casts an important light onto an issue that many may prefer to be swept into the shadows of civilization. Engel offers a systematic exploration of the disease, its rapid and far-reaching proportions, the victims and their suffering, and the barriers to effective eradication.

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Lauinger, John. "It's swine of the times," Daily News, June 28, 2009.

Markel, Howard and Potts, Sam, "American Epidemics, a Brief History," New York Times, May 3, 2009, Week In Review section.

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