

Sonali Krishnan-Deem

GLST 167

Temporalities Project

Spring 2017

Part I: Introduction

Influenza, or more commonly known as the “flu” is a dangerous infection that appears in the winter and spring. It is similar to a cold in the way that the virus attacks the body via the respiratory tract (the airways) but it is much more intense. Some symptoms include body aches, fatigue, weakness, a cough, and a high fever that may run for a few days. This illness can lead to other diseases, such as a serious case of pneumonia, which is why it is so dangerous. The flu virus evolves every few years, meaning the vaccine can only protect humans for so long and only so goes so far. The vaccine contains pieces of past, inactive viruses that create antibodies, attacking the virus with another form of itself. The vaccine was found in 1933, when scientists Jonas Salk and Thomas Francis discovered that it was not the bacterium *Haemophilus influenzae*, but many different strains of a virus, entitled Influenza A, B, and C. Type A viruses are found among animals you would typically find on a farm; type B circulates among humans, and does not create pandemics. Type C virus affects humans and pigs. The vaccine using bits of these strains was first used during WWII in 1938, and then used to develop an effective polio vaccine in 1952.

There are many different types of the flu, including bird flu, swine flu, and the stomach flu. The stomach flu is caused by a range of things, such as bacteria, viruses, and unclean water, and is the only strain of the flu that can be treated with antibiotics. It is a bacterial infection, not a

virus. This strain also may cause the victim to lose a lot of moisture, resulting in dehydration and possible hospitalization.

Infectious diseases are dangerous for healthy people, so for those with weak immune systems it is especially dangerous. This puts many at risk. The people most vulnerable to this sickness are children and infants, the elderly, and pregnant women. They are more susceptible to catching other viruses or bacteria while falling ill with this disease.

Part II: Historical Analysis

Influenza, or the flu, dates back to 412 BCE, when Hippocrates, the father of modern medicine, described the symptoms at Perinthus in Northern Greece (Mir, et al, 163). The next recording was in 855 BCE, when Ibn al atir described a virulent flu-like epidemic in central Asia, spreading all the way to Persia (Mir, et. al, 163). Throughout history, we see documented accounts from all around the world describing a rampant illness that takes over entire communities, countries, and continents. While the flu has been around for thousands of years, the concept of a virus was first discovered in 1892, when Dmitri Ivanovski discovered that even after filtration, extracts from infected leaves were still infectious. This led to a whole new world of study, opening to the area of filterable pathogens (Lecoq, 2001). This discovery didn't become relevant to Influenza until many years later, after Richard Friedrich Johannes Pfeiffer mistakenly identified the cause of the Flu to be from a common bacterium, which he named *Bacillus Influenzae* - more commonly known as Pfeiffer's Bacillus (Devlin, 5) . This assumption was not unreasonable, as both the causes of cholera and the plague were discovered to originate from bacteria, and the virus had only recently been uncovered. Pfeiffer's identification was widely

accepted, and only challenged in 1918, one of the worst influenza outbreaks in history. Before this outbreak, there were only a handful of scientists who questioned Pfeiffer's claim. These scientists could not always find the *Bacillus Influenzae* in the samples from those who had fallen ill with the flu (Devlin, 5). In Camp Lewis, Washington, however, a troopship arrived from Philadelphia. Many onboard had caught the sickness, and the scientist's in the camp decided to take samples to be sure it was the highly contagious influenza. Autopsies were performed on those who had passed, and an interesting discovery was made, yet again. The lungs from those influenza patients were not showing the same lesions and other effects as from those who died from bacterial respiratory diseases (Devlin, 6). Now, there is a change in the tone of those studying epidemiology. There is a chance to discover a new virus, possibly, or something else entirely, nobody knows.

In the 1920s, Peter Olitsky and Frederick Gates took nasal secretions from influenza patients and passed them through a porcelain filter (Devlin, 7). This process was referred to as the Chamberland technique. This porcelain filter would stop bacteria from falling through, but would allow smaller particles, such as viruses, to pass. Olitsky and Gates found that the infectious agent easily passed through the filter. This meant that if the cause of Influenza was a bacterium, it was much, much smaller than originally predicted, or it was not even a bacterium at all. Olitsky and Gates identified this small organism as *Bacterium pneumosintes*, and went on to study it further by injecting pure cultures into the throats of medium sized rodents (Devlin, 7). These animals all ended up catching a fever, hinting at a spread of influenza, but after the autopsies were performed, the lesions on the lungs proved to be from method of execution, and thus the research began all over again.

Around the same timeframe, Charles Jules Henry Nicolle and colleagues at the Pasteur Institute collected secretions from an influenza patient and injected them into the eyes and noses of two monkeys. They also administered the same thing to a human volunteer, but under the skin. The monkeys became ill with fever, and the human developed flu- like symptoms (Devlin, 8), bringing the medical world ever closer to discovering the origin of the dreaded influenza.

Finally, it seems, the word reached the European world from Asia. During the 1918 pandemic, the Japanese were performing human experiments to find the origin of the illness. With a control of 14 people who had been previously exposed to the flu, inoculating the throats and noses of 18 healthy people, and injecting 8 more healthy people with either filtered sputum from flu victims or filtered flu victim's blood, the Japanese confirmed that the flu was caused by a virus (Devlin, 8). None of the people who had been previously exposed had fallen ill, meaning that their immune system had built up antibodies to fight the virus upon its return.

It is important to note here that the flu returns seasonally. This means that every year, there is a slightly evolved, modified virus (Medcom). The virus may return after many years of being dormant, but it will return, and this, more often than not, is when pandemics occur. The flu is not only dangerous because of the possibility of dehydration, but it also leads to much more serious conditions. In 2003, right during flu season (October through May), 8,000 people fell ill with Severe Acute Respiratory Syndrome, or SARS, leaving 774 people dead across three different continents (Medcom). The pandemic of 1918 was the most violent in history so far, claiming over 50 million lives. That's more people than those who died in World War I. It attacked all sorts of people from all demographics; young and old, strong and weak. This is a

kind of Cytokine storm, and overreaction of the immune system is so strong that it ends up blocking the airways with fluids and macrophages (Medcom).

This pandemic affected daily life as well, not just those who were sick. During the war, Medical supplies ran out, there was a shortage of doctors, funerals had to be limited to fifteen minutes. Towns began requiring certificates of health to enter, and some quarantined themselves altogether (Medcom).

Amidst all the drama, the pandemic of 1918 is often referred to as America's Forgotten Pandemic (Honigsbaum, 182). WWI overshadowed the illness, which in the end might have been the flu's greatest weapon. There are parallels between the political discourse and the medical discourse: both promoted excessive fear of the enemy, which can all too easily tip into hysteria, and too much fear (Honigsbaum, 183). Infectious diseases can be seen as a threat to the business of the state, rather than just isolated to health. In the 1980's and 90's, the word that infectious diseases were a threat to society was spreading (Dehner, 110). The globalization of the world has made it so simple for a virus to hop from one person to the next continent, infecting entire populations at a time. Our foods are grown in other countries, what happens when the bird flu has another outbreak? The blatant slaughter of over 2,000 chickens, and the isolation of an entire territory, as what happened in Hong Kong in 1997 (Dehner, 115)? What is the solution?

Part III: The Future Story

Infectious diseases are a threat to society, there's no doubt about that. They can eradicate entire cities, countries, and species. The demise of much of the world began in a year that was like any other, with a flu season that was unlike anything anyone had ever seen.

The year had been an eventful one. The Syrian Refugee crisis was becoming a more critical issue, Donald Trump became president of the United States, people still believed that feminists were crazy, and North Korea began testing ballistic missiles, and the Yemen war was leading at least four countries into the threat of famine. The year 2017 started off with a multitude of disasters, which only worsened as time went on. The Syrian and Yemen wars soon escalated to World War III, and countries from every corner of the globe were pulled in. The War brought on many different elements, as wars usually do, that all contributed to the creation of an entirely new strain of influenza. Some scientists were trying to find a way around the ban on chemical warfare, some were trying to unveil cures for the incredibly detrimental effects that the chemicals used had on humans. They were building new bombs, trying to eradicate existing diseases, finding cures for cancer, and trying to stay on top of the million other things that happen in the world during times of war. What they didn't notice, though, was the slightly altered symptoms that people had during flu season. They continued to give vaccine after vaccine, following the same pattern that they had been for years. The symptoms had worsened quite drastically, but over such a long period of time that it was not noticeable until you compared a strain from 1918 to a strain from 2050. I have had the opportunity to interview several different key people, ranging in age and occupation, on the demise of the world. The first, Clarke Rose, was a general physician in the United States in 2050. Here is her story.

“The farmers were the first to come in. Or at least those who lived near farms, interacted with animals on a daily basis. They had the typical symptoms of the flu, fatigue, fever, dehydration, runny noses, but as we got further into the flu season, they became more and more like the swine or avian flu. There were increased cases of vomiting, severe fevers, sore throats so

bad that people had difficulty swallowing. The years following only got worse. Slowly, there were increased cases of death, and we noticed that it was coming from areas with a concentrated amount of animal farmers, you know because we did not have the information we do now. Just because we noticed the symptoms were similar to bird and swine flu, the virus itself looked entirely different. Almost as if it was a mixed strain. The virus took the two types that we did not have a full, 100% effective vaccine for, and combined them. It created a brutal, violent, massive pandemic, much like the one in 1918. Millions of people died then, and you'd think humankind would have come up with a new way to fight a pandemic after more than 100 years, but no. We're not that smart yet. It is still out there, too. Disease is a scary thing, especially when it evolves.

Government official, Jim Watson, spearheaded the Quarantine Project in 2063. For those of you unfamiliar with this, it is what created the world we live in today. The limited space, the cleanliness, the routine checkups and examinations, strict health laws, all of this falls under the Quarantine Project. It is why we have so many small communities all around the world, why we are told to never venture outside the gates. I got the chance to speak with Watson on the brainpower behind the project, and why it still is in place today, when many believe and preach that the disease has been controlled.

“You know, there are still people that live out there. There are some who believed that their natural herbs would allow the flu to simply wash away. As if they were flushing it out of their body. The same people are the ones who took off to the wild and lived simple lives because they believed the pollution and chemicals we use in the modern day cause cancer. Those people

may be right, for all we know! They could be healthier than any of us here - doubtful, sure, but it is possible.

We created the Quarantine Project so we can have an organized way to be sure these potentially infected vagrants stay out of the healthy people's lives. It was a hard decision to make, considering all the factors that went into the beginning of it. We had to find the healthiest cities to begin with, then somehow flush out those who had been infected already, and all those they had been in contact with. We had to tell people to kill all their animals on the farm. The explanation seems weak, that we had a suspicion of a new disease. Some people called us violent, but we really tried to be as peaceful as possible. Some people just do not want to listen to reason. It became hard once you tried to tear away a child from her mother, or a father from his family. People did not want to leave then. They wanted to stay together, and then the entire family elected to leave. At that point, do we allow all these people to go? It then becomes an ethical issue, you know? We need to be able to further the human race, but we do not want an uprising on our hands. We want to give people the choice, but if we give that to too many people, we end up with a very small number to actually maintain a city.

Anyways, that's why we still have the Quarantine Project in place, see. Even in 2108, thirty four years after the last official flu season, we still have the fear that those people who left when we started this are out there, still getting sick and somehow fighting it off. Maybe we could learn something from them, sure, but do we want to risk the eradication of humankind? Do we want another pandemic on our hands?"

Alfred Weirstrass was a farmer who now lives in Edinburgh, Scotland, one of the quarantined towns. He only had a few words to share with me.

“All I knew is they came one day and told me I had to kill all my pigs. Did not tell me why, just that I had to do it. Those pigs were my livelihood, how was I supposed to make a living off of a bunch of empty pig pens? Then my littlest one, Margaret, got sick. I understood then. It was something to do with the swine flu that had come around years ago. We live in Edinburgh now. No pigs, my but other girls are safe. And my boy. My family is safe.”

Watson told me he hopes that one day we will be able to go out and explore the world again, but Rose also tells me that disease doesn't just die. There is no way to completely eradicate something, but they are working on a better solution. We are always, always working towards a better solution. Until then, folks, stay safe, stay inside those walls.

Works Cited

Dehner, George. *Global Flu and You: A History of Influenza*. London: Reaktion, 2012. Print.

Devlin, Roni K. "Chapter 1: The Influenza Virus." *Influenza*. Westport, CT: Greenwood, 2008. N. pag. Print.

History and Virology of Pandemic Influenza (Part 1). Medcom, 2009. *Nursing Education in Video*. Web. 20 Apr. 2017.

Honigsbaum, Mark. "Chapter 6: 'A Sense of Dread Is Very General': The First World War, The Spanish Flu, and the Northcliffe Press." *A History of the Great Influenza Pandemics: Death, Panic, and Hysteria, 1830-1920*. London: I.B. Tauris, 2014. 180-206. Print.

Lecoq, H. "[Discovery of the First Virus, the Tobacco Mosaic Virus: 1892 or 1898?]." *Comptes Rendus De L'Academie Des Sciences. Serie III, Sciences De La Vie*. U.S. National Library of Medicine, Oct. 2001. Web. 20 Apr. 2017.

Mir, Shakil A., V. R. Tandon, Z. Abbas, Z. Singh, S. Farhat, M. A. Pukhta, Z. Ashai, S. Parveen, and N. Jan. "History of Swine Flu." *Journal of Medical Education & Research* 11.4 (2009): 163-64. *Jkscience.org*. Journal of Medical Education and Research. Web. 19 Apr. 2017.

Quinn, Tom. *A Social History of Influenza*. London: New Holland, 2008. Print.