

Pandemic Plan for the Church

Ministering to the Community in a Time of Crisis

1918 Influenza Pandemic

Due to their similarity,
the pathogenesis of the 1918 Influenza is used as a model
for what to expect if the current Highly Pathogenic Avian Influenza H5N1 strain
were to become human to human transmissible.

1918 Influenza Pandemic

The 1918 Influenza was a global disaster. It was a subtype H1N1 which was another avian flu that was first hosted in birds. The virus had mutated to a stage in which this influenza was then transmitted to humans, then eventually became human-to-human transmissible. The results were tragic. Nearly 20% of the world population suffered from this pandemic to some extent.

It is estimated that the 1918 Influenza killed between 50 and 100 million people. Experts state that this influenza pandemic killed more people in one year than in the four years of the Black Death Bubonic Plague. Ten times as many Americans died of influenza during the pandemic than in World War I. One fifth of the world's population was attacked by this deadly virus, many died within days of their first symptoms. Within the 18 months of the pandemic, more people had succumbed to this virus than any other illness in recorded history.

The 1918 Influenza was also known as the Spanish Flu due to the erroneous belief that it originated in Spain. This was mainly because the pandemic received greater press attention in Spain than in the rest of the world. Spain at the time was not involved in the war and did not censor the news as did the United States and other countries. However, some experts believe that it very likely began in the United States in Haskell County, Kansas and was carried to Camp Funston by a new army recruit. It is estimated that the 1918 Influenza spread across the United States within seven days and around the world within three months.

The Devastation of the 1918 Influenza

There were three waves of the pandemic during a twelve-month period. Each wave was more severe and deadlier than the last. The high levels of illness and death resulted in great social disruption and economic loss. Everyday life was disrupted, and society was devastated.

Entire families were killed; many died in bed beside their loved one and remained there until help could come. In some places, entire villages were wiped out. Bodies were piled up in cities as in the days of the bubonic plague. There were no funerals, and in many cases, victims were buried in mass graves.

Due to the massive death rates, there was a lack of health care workers; a shortage of coffins; and scarcity of medicines. People were required to wear gauze face masks and were prohibited to meet socially for fear of the spread of the disease. Bodies were piled up in cities as in the days of the bubonic plague. Society and its infrastructure were devastated.



Iowa State University Gym Transformed into a Temporary Hospital
During the 1918 Influenza Pandemic (Iowa State University)¹

Unlike the COVID-19 pandemic, it was not the government mitigations of lockdowns that devastated society, it was the massive amount of deaths.

Signs and Symptoms of 1918 Influenza

Patients who first presented with the disease complained of headache, sore throat, body and muscle aches, and an unproductive cough. These symptoms are similar to the seasonal influenza. However, the most common sign of the 1918 Influenza was a fever that lasted for several days. Many bled through the nose due to irritated mucous membranes. Secondary infections of bacterial pneumonia and bronchitis were often the cause of death.

Records of healthcare providers and journals of family members paint a grim picture of the process through which a patient responded to the influenza. Archives of notes written by doctors and medical students depicted miserable deaths. Their notes described patients who became short of breath and who appeared blue from cyanosis (lack of oxygen). The patients would gasp for hours struggling for breath as their lungs filled with fluid from the inflammation caused by the cytokine storm. A blood-tinged froth would come from their nose and mouth. Some patients would hallucinate and presented with an altered level of consciousness as their system was starved for air.

“As their lungs filled...the patients became short of breath and increasingly cyanotic. After gasping for several hours they became delirious and incontinent, and many died struggling to clear their airways of a blood-tinged froth that sometimes gushed from their nose and mouth. It was a dreadful business.”

Issac Starr, 3rd year medical student, University of Pennsylvania, 1918.²

Healthcare was Overwhelmed

There was limited scientific knowledge, with effective treatment and prevention methods not being fully utilized. Many cities and public health officials were ill equipped to deal with the health crisis.

Many healthcare workers were off serving in the war effort. At home hospitals were inundated, and those workers were overwhelmed. Staff hours were lengthened. Providers became ill themselves, and many stayed home in fear. Stressed doctors did not register cases timely. Paperwork was not properly maintained, with the cause of death not always written correct on the death certificate. Students were tasked with professional duties. There was a shortage of basic medicines and supplies. Hallways, porches, churches, and gymnasiums became makeshift accommodations. People were turned away and the ill were discharged, many people languished at home, and people died for want of basic care.

A Call to Volunteers

Volunteers were called upon, those who answered the call included civilian doctors unable to serve overseas, dentists were authorized to practice as physicians, medical students were graduated early, retired doctors and nurses came out of retirement. Student nurses were put to work, and lay people including many out-of-work teachers trained as nurses. Some women rose to the challenge and volunteered for emergency transport and put their lives on the line.

In addition to hospital duties, volunteers were often assigned to homes in which all the adults were incapacitated. It was not an easy job, particularly for some of the younger women,

who quickly lost their eagerness to help when they found themselves in ramshackle, dirty houses where they were expected to wash and diaper ragged, runny-nosed children on top of cleaning up after adult patients who could do nothing for themselves. ³

Local chapters of the American Red Cross established kitchens, houses for convalescence, they transported the sick, supplies, and even bodies. Many women from various churches participated by daily going to their local health departments to enquire on the worst cases. They would then go to the fellowship hall in their church buildings, cook meals and deliver them to families. It was determined that these efforts saved many lives.

All over the world, society and its infrastructure were devastated. The 1918 Influenza Pandemic has been cited as the most devastating epidemic in recorded world history.

Similar Pathogenesis of 1918 Influenza and HPAI H5N1

The highly pathogenic avian influenza (HPAI) H5N1 has been followed and studied extensively for the past two decades. The virulence, structure, and origin of this particular strain are very similar to the influenza virus that caused the 1918 Influenza Pandemic. Due to this similarity, the pathogenesis of the 1918 Influenza is used as a model for what to expect if the current HPAI H5N1 strain were to become transmissible between people causing a pandemic. It is suspected that a similar pandemic will take place if the H5N1 strain mutates as the H1N1 strain did just over 100 years ago.

Health officials state that people who have died from the H5N1 circulating today have died in the same manner that those who died during the 1918 pandemic. The main difference between the 1918 influenza virus and the H5N1 virus is that the current one has not mutated to become able to transmit from human-to-human. The study of the 1918 influenza has given great insight into the pathophysiology as well as the social affects this current virus will have if it becomes a pandemic event.

Scientists believe that the 1918 Flu pandemic was so deadly because it triggered a tremendous immune response in the human body, called a cytokine storm. This is very similar to the pathophysiology of the H5N1. A cytokine storm can lead to a serious respiratory condition called acute respiratory distress syndrome (ARDS). (For more information on this condition please see the sections: “Pathophysiology of H5N1 – Cytokine Storm,” and “How to Prevent ARDS.”)

In comparison, seasonal influenza viruses primarily cause infection with inflammation, congestion and some death to epithelial cells (tissue that line the airways) of the larger airways (trachea, bronchi, and bronchioles). However, the H5N1 virus causes inflammation and

congestion of the larger airways in addition to causing extensive inflammation and damage to the alveoli (small air sacs where gas is exchanged).

Infections with 1918 H1N1, the novel 2009 H1N1 pandemic virus, and H5N1 show virus in mucosal epithelial cells (cells that resist allergens, pathogens, and other foreign particles) of the airways (from the nasopharynx to the bronchioles), alveolar macrophage (immune cells that act as first line of defense), and pneumocytes (responsible for gas exchange). Whereas infections with seasonal influenza viruses show viral antigens primarily in mucosal epithelial cells of the larger airways.

In other words, infections with seasonal influenza cause inflammation in the larger airways, however, the H5N1 not only causes inflammation and infection in the larger airways, it also shows infection and extensive damage in the smaller air ducts of the lungs called alveoli in the lungs, as well as cells that play a crucial role in immune defense.

Current Research

In 2005, Jeffery Taubenberger, MD, PhD, NIAID, American virologist, completed the entire genome sequence of the 1918 H1N1 Influenza virus. This has given new insight into the virus and state that it was a very “bird like virus” similar to the H5N1 virus today. Researchers have studied how the infection took hold by infecting mice with a reconstructed 1918 H1N1 virus. They observed that not only did the mice suffer severe lung disease, but also their immune systems responded ferociously to the infection. Most of the mice became seriously ill within 24 hours and died within five days. This experiment proved to researchers that the host’s inflammatory response is highly activated by the virus causing severe damage and consequentially killing the host. This is what makes the virus so pathogenic. Finding out why the immune system responds so aggressively but still fails to extinguish the infection might help to fight the present H5N1 virus.

¹ State Gym transformed into a temporary hospital during the Spanish influenza epidemic, 1918. RS 13/16/D, Box 1123, used with permission, Iowa State University, Accessed November 16, 2015. <https://isuspecialcollections.wordpress.com/2015/01/16/a-bird-named-enza-flew-to-isu-the-flu-epidemic-of-1918/>.

² “Influenza in 1918: Recollections of the Epidemic in Philadelphia. 1976” Issac Starr, *Ann Intern Med.* 2006 Jul 18;145(2):138-40. doi: 10.7326/0003-4819-145-2-200607180-00132. Epub 2006 Jun 26. PMID: 16801626., <https://pubmed.ncbi.nlm.nih.gov/16801626/>, Accessed March 12, 2026

³ “Dr. Fred and the Spanish Lady; Fighting the Killer Flu,” Betty O’Keefe and Ian MacDonald, Heritage House Publishing Company, Ltd, British Columbia, 2004,” page 96