

Lesson 2 – Case Study: The 1918 Influenza Pandemic – Factors Beyond the Biological that Influence the Spread of Disease

A Disease Like No Other

Every year, people get an influenza vaccine. The vaccine is given annually because scientists have not figured out how to make a version that provides long-term protection. Part of the difficulty is that influenza virus changes. The changes cause antibodies previously made by our immune system to be less efficient at recognizing the virus. You can think of it as a Halloween costume. Depending on how good your costume is, more or fewer of your friends may know it is you. In the case of influenza virus, the more it changes, the more people's immune systems won't recognize it. Most often, the virus accumulates a series of small changes causing annual *epidemics*. But sometimes, the changes are dramatic. The result is that almost everyone is a target for infection. This is when we experience a worldwide epidemic or *pandemic*.

The 1918 influenza pandemic is considered the worst in history. It is estimated that about one of every three people in the world were infected and 50 to 100 million people died. The 1918 pandemic has been studied extensively to try to learn as much as we can about the virus that caused so many deaths. Interestingly, the virus changed even during the course of the pandemic. Scientists describe three waves during the pandemic. Each had its own unique characteristics.

The first wave of the pandemic likely began in the United States during the spring of 1918. During this first wave, tens of thousands of people in the U.S. became ill as the virus quickly spread. But, most recovered.

Wave two started late in the summer and lasted through the fall of 1918. This second wave was the deadliest of the three. Sometime during the summer, the virus changed in a way that made it much more dangerous. People infected during the second wave developed severe symptoms, often turning blue because of lack of oxygen. Many died within hours. The virus was particularly deadly when it infected previously healthy, young adults. Many nurses, doctors, pregnant women, and soldiers died during this wave. Sadly, so many people were dying so quickly during this wave that there were not enough coffins or resources to take the bodies of the dead away. The bodies were piled in makeshift morgues.

January 1919 is considered the start of wave three. Although the virus was not as deadly as it was during the second wave, it was still more deadly than during wave one. The third wave lasted throughout the spring. As the spring turned into summer, the pandemic subsided. The influenza virus that had caused so much death and destruction did not go away, but it had less impact. Two things led to the end of the viral rampage. First, so many people had been infected, that those who survived were mostly immune. Second, the virus changed again, and the new changes weakened the virus, rendering it less capable of causing severe disease.