

INFLUENZA STRIKES

Throughout history, influenza viruses have mutated and caused pandemics or global epidemics. In 1890, an especially virulent influenza pandemic struck, killing many Americans. Those who survived that pandemic and lived to experience the 1918 pandemic tended to be less susceptible to the disease.

From Kansas to Europe and Back Again:

Where did the 1918 influenza come from? And why was it so lethal?

In 1918, the Public Health Service had just begun to require state and local health departments to provide them with reports about diseases in their communities. The problem? Influenza wasn't a reportable disease.

But in early March of 1918, officials in Haskell County in Kansas sent a worrisome report to the Public Health Service. Although these officials knew that influenza was not a reportable disease, they wanted the federal government to know that "18 cases of influenza of a severe type" had been reported there.

By May, reports of severe influenza trickled in from Europe. Young soldiers, men in the prime of life, were becoming ill in large numbers. Most of these men recovered quickly but some developed a secondary pneumonia of "a most virulent and deadly type."

Within two months, influenza had spread from the military to the civilian population in Europe. From there, the disease spread outward—to Asia, Africa, South America and, back again, to North America.

Wave After Wave:

In late August, the influenza virus probably mutated again and epidemics now erupted in three port cities: Freetown, Sierra Leone; Brest, France, and Boston, Massachusetts.

In Boston, dockworkers at Commonwealth Pier reported sick in massive numbers during the last week in August. Suffering from fevers as high as 105 degrees, these workers had severe muscle and joint pains. For most of these men, recovery quickly followed. But 5 to 10% of these patients developed severe and massive pneumonia. Death often followed.

Public health experts had little time to register their shock at the severity of this outbreak. Within days, the disease had spread outward to the city of Boston itself. By mid-September, the epidemic had spread even further with states as far away as California, North Dakota, Florida and Texas reporting severe epidemics.

The Unfolding of the Pandemic:

The pandemic of 1918-1919 occurred in three waves. The first wave had occurred when mild influenza erupted in the late spring and summer of 1918. The second wave occurred with an outbreak of severe influenza in the fall of 1918 and the final wave occurred in the spring of 1919.

In its wake, the pandemic would leave about twenty million dead across the world. In America alone, about 675,000 people in a population of 105 million would die from the disease.

Mobilizing to Fight Influenza:

Although taken unaware by the pandemic, federal, state and local authorities quickly mobilized to fight the disease.

On September 27th, influenza became a reportable disease. However, influenza had become so widespread by that time that most states were unable to keep accurate records. Many simply failed to report to the Public Health Service during the pandemic, leaving epidemiologists to guess at the impact the disease may have had in different areas.

World War I had left many communities with a shortage of trained medical personnel. As influenza spread, local officials urgently requested the Public Health Service to send nurses and doctors. With less than 700 officers on duty, the Public Health Service was unable to meet most of these requests.

On the rare occasions when the PHS was able to send physicians and nurses, they often became ill en route. Those who did reach their destination safely often found themselves both unprepared and unable to provide real assistance.

In October, Congress appropriated a million dollars for the Public Health Service. The money enabled the PHS to recruit and pay for additional doctors and nurses. The existing shortage of doctors and nurses, caused by the war, made it difficult for the PHS to locate and hire qualified practitioners. The virulence of the disease also meant that many nurses and doctors contracted influenza within days of being hired.

Confronted with a shortage of hospital beds, many local officials ordered that community centers and local schools be transformed into emergency hospitals. In some areas, the lack of doctors meant that nursing and medical students were drafted to staff these makeshift hospitals.

The Pandemic Hits:

Entire families became ill. In Philadelphia, a city especially hard hit, so many children were orphaned that the Bureau of Child Hygiene found itself overwhelmed and unable to care for them.

As the disease spread, schools and businesses emptied. Telegraph and telephone services collapsed as operators took to their beds. Garbage went uncollected as garbage men reported sick. The mail piled up as postal carriers failed to come to work.

State and local departments of health also suffered from high absentee rates. No one was left to record the pandemic's spread and the Public Health Service's requests for information went unanswered.

As the bodies accumulated, funeral parlors ran out of caskets and bodies went uncollected in morgues.

Protecting Yourself From Influenza:

In the absence of a sure cure, fighting influenza seemed an impossible task.

In many communities, quarantines were imposed to prevent the spread of the disease. Schools, theaters, saloons, pool halls and even churches were all closed. As the bodies mounted, even funerals were held out doors to protect mourners against the spread of the disease.

Public officials, who were unaware that influenza was a virus and that masks provided no real protection against viruses, often demanded that people wear gauze masks. Some cities even passed laws requiring people to wear masks. Enforcing these laws proved to be very difficult as many people resisted wearing masks.

Advertisements recommending drugs which could cure influenza filled newspapers. Some doctors suggested that drinking alcohol might prevent infection, causing a run on alcohol supplies. Some folk healers insisted that wearing a specific type of amulet or a small bag of camphor could protect against influenza.

States passed laws forbidding spitting, fearing that this common practice spread influenza.

None of these suggestions proved effective in limiting the spread of the pandemic.

Communications During the Pandemic:

Public health officials sought to stem the rising panic by censoring newspapers and issuing simple directives. Posters and cartoons were also printed, warning people of the dangers of influenza.

Although the Public Health Service was aware that much of the nation's large immigrant population did not speak or read English, posters used English almost exclusively. But even native English speakers found the posters and directives confusing. And limited understanding of influenza, combined with the rapidity of its spread, meant that these directives were often ignored or poorly understood.

Fading of the Pandemic:

In November, two months after the pandemic had erupted, the Public Health Service began reporting that influenza cases were declining.

Communities slowly lifted their quarantines. Masks were discarded. Schools were re-opened and citizens flocked to celebrate the end of World War I.

Communities and the disease continued to be a threat throughout the spring of 1919.

By the time the pandemic had ended, in the summer of 1919, nearly 675,000 Americans were dead from influenza. Hundred of thousands more were orphaned and widowed.

VOICES OF THE PANDEMIC

March 1918

"On March 30, 1918, the occurrence of eighteen cases of influenza of severe type, from which three deaths resulted was reported at Haskell, Kansas." Public Health Reports, March, 1918

September 1918

"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....These men start with what appears to be an ordinary attack of LaGrippe or Influenza, and when brought to the Hosp. 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."

A physician stationed at Fort Devens outside Boston, late September, 1918

October 1918

"There are six sick in one house and they are in two beds. None of the families in this little community have enough bedding to keep warm nor the clothing needed in sickness. The Red Cross women have taken the entire situation in charge and are using one of the mill dwellings as headquarters. This is furnished with...things needed for preparing nourishment and otherwise caring for the sick. All nurses have been formed in squads and relieve each other day and night. Every precaution is taken to keep the disease from spreading. Masks are worn and disinfectants are used freely."

News and Courier (Charleston), letter from a resident in Cheraw, October 10, 1918

November 1918

"The epidemic has revived in Oak Ridge. There have been seven deaths in that township. Dr. Bulla...advocates staying away from public meetings and reiterates the classic preventive measures: Always use separate drinking cups, dishes and towels, or have them boiled before using after another. People are urged once more to hold a handkerchief over the mouth when sneezing or coughing."

Twin City Sentinel (North Carolina), November 22, 1918

December 1918

Alabama: "Sir: I have the honor to forward herewith two newspaper clippings, one from the Montgomery Advertiser, the other from the Journal. It will be noted that the local press has made capital out of the statement purporting to come from the Surgeon General of the PHS, particularly laying stress upon the sentence, "the country need not fear that the influenza epidemic will return. It has come and gone for good." Inasmuch as Montgomery is at present in the throes of a serious outbreak of influenza the Service representative has been endeavoring to have reasonable restrictions imposed for the protection of well people. All efforts to use the newspapers for educative measures have proved unavailing. In view of the statement from Washington the local newspapers and a few citizens take the stand that the undersigned is out of touch with headquarters and that the measures he has proposed are preposterous. In consequence thereof the handling of the local situation has been rendered much more difficult.

Letter written on December 11, 1918 from Montgomery Alabama to Surgeon General Rupert Blue by Robert Oleson.

January 1919

Referring bureau wire this date indications are influenza will become epidemic here soon unless active measures taken prevent if city will adopt my recommendation relative closing theaters picture shows and other crowding places there will be no necessity for emergency hospital this demonstrated in previous outbreak at present time all places amusement excessively crowded and reports show marked daily increase in cases and deaths emergency hospital this demonstrated in previous outbreak at present time all places amusement excessively crowded and reports show marked daily increase in cases and deaths.

New Orleans Telegram from a PHS Officer to Surgeon General Rupert Blue.

FIGHTING INFLUENZA

How did physicians and scientists understand influenza in 1918?

During the mid to late nineteenth-century, physicians and scientists had begun to understand that diseases are caused by microorganisms. This was a radical departure from traditional medical theories which had held that diseases were caused by miasmas or an imbalance in the body's humors.

Building on this new understanding of disease, scientists and physicians achieved incredible successes, identifying fifty causative agents of diseases ranging from typhoid, tuberculosis, cholera, plague and malaria between 1880 and 1920.

In 1918, most physicians and scientists mistakenly believed that influenza was caused by a bacteria. not a virus. Called *Pfeiffer's bacillus*, this bacteria had been first identified as the cause of influenza by Robert Friedrich Pfeiffer, a leading German scientist. Although Pfeiffer had failed to provide definitive proof that this bacillus actually caused influenza, few scientists questioned his claims.

In the midst of the pandemic, however, this theory came under attack. Researchers performing autopsies on influenza victims reported, over and over again, that they had failed to locate the bacillus. Attempts to infect healthy patients with influenza by injecting them with Pfeiffer's bacillus also failed to cause influenza.

Although they were unable to locate the cause of influenza, scientists and physicians did understand that influenza was spread through contact with droplets from the nose and throat of an infected person during coughing and sneezing.

What happened when patients contracted influenza in 1918?

Most early twentieth-century physicians were familiar with influenza and its symptoms. Diagnosis, however, was often difficult as physicians frequently confused the disease with another viral infection, the common cold. In 1918, diagnosing influenza became even more difficult because an especially virulent form of the disease had erupted.

Early symptoms of the disease now included a temperature in the range of 102 to 104 degrees. Along with this high temperature, patients also experienced a sore throat, exhaustion, headache, aching limbs, bloodshot eyes, a cough and occasionally a violent nosebleed. Some patients also suffered from digestive symptoms such as vomiting or diarrhea. Most patients who experienced these symptoms made a full recovery.

Many patients recovered only to suffer a relapse. Their temperatures, which had fallen, rose again and

they now experienced serious respiratory problems. In some cases, these patients also experienced massive pulmonary hemorrhages. After death, pathologists found these victims to have swollen lungs and oversized spleens.

Because patients experienced symptoms not traditionally associated with influenza, physicians found the disease especially difficult to diagnose in 1918. In the early stages of the pandemic, many physicians and scientists even claimed that influenza patients were suffering from cholera or bubonic plague, not influenza.

Preventing Influenza:

Before the advent of antibiotics in the 1940s, practitioners had only a limited ability to treat diseases. Moreover, even if antibiotics had been available in 1918 (they were not), a viral disease such as influenza could not have been treated by these drugs.

As a viral infection, influenza can be prevented by a vaccine and during the early weeks of the pandemic, many people believed that a vaccine against influenza was forthcoming. Although vaccines have been developed before scientists have ascertained the exact cause of a disease, medical researchers' failure to ascertain and isolate the influenza virus did not bode well for the development of an influenza vaccine at this time.

During the fall of 1918, researchers from the Public Health Service, including the renowned Joseph Goldberger, began looking for a vaccine. They were joined by researchers in many other countries. These researchers developed a range of vaccines which were then tested in communities all over the world. None of these vaccines proved effective.

While researchers placed their hope in vaccines, many politicians and physicians came to believe that the spread of the disease could be contained by quarantines and bans on public gatherings.

Across the United States, cities and counties also began to require or recommend that citizens wear gauze masks. Unfortunately, while masks are highly effective at preventing diseases which are caused by bacteria, they are less effective in providing protection against viral diseases. As a result, even in communities where the wearing of masks was made mandatory, influenza could not be contained.

Public officials also sought to limit influenza by banning spitting in public places and demanding that those who sneezed covered their mouths.

Treating Influenza:

Confronted with a widening pandemic, physicians and scientists now began thinking about ways to treat and cure influenza. Here again, limited understanding of the disease meant that many of the treatments advocated by both physicians and laypeople were ineffective.

Practitioners and patients used a variety of remedies, many of which could be found in their local drugstores. Patent medicines, that is medicines whose ingredients were secret and trademarked, were still very popular. Among these medicines, Vicks Vapo-Rub, atropine capsules (belladonna), and a host of other treatments were especially common. In terms of curing or even treating influenza symptoms, these remedies did little to nothing.

Although most physicians no longer believed that diseases were caused by miasmas or an imbalance in the humors, many practitioners did resort to treatments which were derived from these medical theories. These treatments included causing patients to sweat by wrapping them in blankets or cupping them to remove excess blood.

Home remedies were also popular and many people wrote to the Public Health Service recommending treatments which they had developed. A “sure cure” for influenza was proposed by a woman in Missouri who claimed that her secret remedy consisted of water, salt and coal oil. She offered the remedy to the government for a reward. No such reward had been offered but she was not the only person to believe that a reward would be forthcoming.

THE LEGACY OF THE PANDEMIC

No one knows exactly how many people died during the 1918-1919 influenza pandemic. During the 1920s, researchers estimated that 21.5 million people died as a result of the 1918-1919 pandemic. More recent estimates have estimated global mortality from the 1918-1919 pandemic at anywhere between 30 and 50 million. An estimated 675,000 Americans were among the dead.

All of these deaths caused a severe disruption in the economy. Claims against life insurance policies skyrocketed, with one insurance company reporting a 745 percent rise in the number of claims made. Small businesses, many of which had been unable to operate during the pandemic, went bankrupt.

Research on the Pandemic in the 1920s:

In the summer and fall of 1919, Americans called for the government to research both the causes and impact of the pandemic. In response, both the federal government and private companies, such as Metropolitan Life Insurance, dedicated money specifically for flu research.

In an attempt to determine the effect influenza had on different communities, the Public Health Service conducted several small epidemiological studies. These studies, however, were conducted after the pandemic and most PHS officers admitted that the data which was collected was probably inaccurate.

PHS scientists continued to search for the causative agent of influenza in their laboratories as did their fellow scientists in and outside the United States.

But while there was a burst of enthusiasm for funding flu research in 1918-1919, the funds allocated for this research were actually fairly meager. As time passed, Americans became less interested in the pandemic and its causes. And even when funding for medical research dramatically increased after World War II, funding for research on the 1918-1919 pandemic remained limited.

Forgetting the 1918-1919 Pandemic:

In the years following 1919, Americans seemed eager to forget the pandemic. Given the devastating impact of the pandemic, the reasons for this forgetfulness are puzzling.

It is possible, however, that the pandemic’s close association with World War I may have caused this amnesia. While more people died from the pandemic than from World War I, the war had lasted longer than the pandemic and caused greater and more immediate changes in American society.

Influenza also hit communities quickly. Often it disappeared within a few weeks of its arrival. As one historian put it, “the disease moved too fast, arrived, flourished and was gone before...many people had time to fully realize just how great was the danger.” Small wonder, then, that many Americans forgot about the pandemic in the years which followed.

Scientific Milestones in Understanding and Preventing Influenza:

In the early stages of the pandemic, many scientists believed that the agent responsible for influenza was Pfeiffer’s bacillus. Autopsies and research conducted during the pandemic ultimately led many scientists to discard this theory.

In late October of 1918, some researchers began to argue that influenza was caused by a virus. Although scientists had understood that viruses could cause diseases for more than two decades, virology was still very much in its infancy at this time.

It was not until 1933 that the influenza A virus, which causes almost every type of endemic and pandemic influenza, was isolated. Seven years later, in 1940, the influenza B virus was isolated. The influenza C virus was finally isolated in 1950.

Influenza vaccine was first introduced as a licensed product in the United States in 1944. Because of the rapid rate of mutation of the influenza virus, the effectiveness of a given vaccine usually lasts for only a year or two.

By the 1950s, vaccine makers were able to prepare and routinely release vaccines which could be used in the prevention or control of future pandemics. During the 1960s, increased understanding of the virus enabled scientists to develop both more potent and purer vaccines.

Mass production of influenza vaccines continued, however, to require several months lead time.

Twentieth-Century Influenza Pandemics or Global Epidemics:

The pandemic which occurred in 1918-1919 was not the only influenza pandemic of the twentieth century. Influenza returned in a pandemic form in 1957-1958 and, again, in 1968-1969.

These two later pandemics were much less severe than the 1918-1919 pandemic. Estimated deaths within the United States for these two later pandemics were 70,000 excess deaths (1957-1958) and 33,000 excess deaths (1968-1967).