



A streetcar conductor in Seattle turns away a passenger not wearing a mask.

EXCESS MORTALITY IN U.S. CITIES DURING INFLUENZA EPIDEMIC

PERCENT OF POPULATION DYING

CITY	1918-1919			
	SEPT. 8 - NOV. 23 10 WEEKS	NOV. 24 - FEB. 1 10 WEEKS	FEB. 2 - MAR. 29 8 WEEKS	TOTAL 28 WEEKS
PHILADELPHIA	69	61	69	73
FALL RIVER	59	61	54	56
PITTSBURGH	59	52	64	59
BALTIMORE	57	63	64	59
SYRACUSE	53	63	62	58
NASHVILLE	53	56	52	53
BOSTON	50	55	50	52
NEW HAVEN	48	52	50	51
NEW ORLEANS	45	52	50	51
ALBANY	44	60	62	53
BUFFALO	43	46	54	48
WASHINGTON	43	52	50	51
LOWELL	44	50	50	48
SAN FRANCISCO	43	51	52	49
CAMBRIDGE	38	51	51	47
NEWARK	38	51	54	48
PROVIDENCE	38	51	52	47
RICHMOND	38	51	52	47
DAYTON	38	51	52	47
OAKLAND	38	51	52	47
CHICAGO	38	51	52	47
NEW YORK	38	51	52	47
CLEVELAND	38	51	52	47
LOS ANGELES	38	51	52	47
MEMPHIS	38	51	52	47
ROCHESTER	38	51	52	47
KANSAS CITY	38	51	52	47
DEVER	38	51	52	47
CINCINNATI	38	51	52	47
OMAHA	38	51	52	47
LOUISVILLE	38	51	52	47
ST. PAUL	38	51	52	47
COLUMBUS	38	51	52	47
PORTLAND	38	51	52	47
TOLEDO	38	51	52	47
MINNEAPOLIS	38	51	52	47
SEATTLE	38	51	52	47
INDIANAPOLIS	38	51	52	47
BIRMINGHAM	38	51	52	47
MILWAUKEE	38	51	52	47
ST. LOUIS	38	51	52	47
SPOKANE	38	51	52	47
ATLANTA	38	51	52	47
GRAND RAPIDS	38	51	52	47

Between 1918 and 1919, major U.S. cities such as Philadelphia saw more than .70 percent of their populations die.

said, was “good hygiene, good nursing, and symptomatic treatment.” Later writers agreed. “Nursing, not medicine, saved lives,” wrote Carol Byerly, a chronicler of the pandemic in the Army.

Estimating the toll

The virus swept around the world nearly as fast as it flared across the United States. Populations that had been exposed to few or no flu viruses, particularly Eskimos, Native Americans, and Pacific Islanders, were hit especially hard. The terrible autumn wave of cases subsided by late November. But it was followed by yet a third wave, smaller and milder than the second, that peaked in January 1919 and then dwindled to scattered outbreaks through the spring.

No one knows how many dead the pandemic left in its wake since few places kept reliable mortality records at the time. The U.S. death toll was originally estimated at 550,000, but recent estimates put it at 675,000, or about 0.65 percent of the population of 105 million. As for the worldwide toll, an American Medical Association study in 1927 estimated it at 21 million. A 2002 study estimated the flu had slain at least 50 million and perhaps as many as 100 million, out of a population of 1.8 billion. If a pandemic struck today’s population of 6.3 billion with proportional violence, between 175 million and 350 million would die.

Curiously, the pandemic has barely registered in most histories of the period, or even in physicians’ accounts of the war. But it did leave an imprint on medicine. In the 10 years that followed, scientists published more than 4,000 books and articles on influenza, and their determined hunt for the pathogen finally led to the proof in 1933 that it was a virus.

Today there are vaccines for the flu, but they are not 100 percent effective, and they must be adjusted every year to match the evolving virus. There also are several antiviral drugs that can blunt the effects of flu, but they don’t cure it. They also are expensive and in short supply. If the avian flu now circulating in much of Asia leads to a new pandemic, no one knows how well these drugs would work. Further, it would take months to develop a vaccine closely matched to the pandemic virus. Disease experts are well aware of what happened in 1918, and they worry that it could happen again. ■

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When the physicians arrived at the camp eight hours later on that Sept. 23, they found lines of men shuffling through a drizzling rain to an overcrowded hospital. Welch could see immediately that many of them were suffering from severe pneumonia. They were coughing up bloodstained sputum; some were turning blue. The news was as grim as the scene. Welch was told that 12,604 cases of Spanish influenza had been reported at the camp since Sept. 7. There were at least 727 cases of pneumonia. During the day before Welch's arrival, 66 young men had died.

What Welch and company had walked into was one of the key explosions in a biological wildfire that was to take 50 million or more lives around the world—more than any other disease outbreak in history. Alfred W. Crosby, a leading chronicler of the episode in the United States, went even further in writing about the influenza pandemic of 1918-19. "Nothing else—no infection, no war, no famine—has ever killed so many in so short a period," he said.

The pandemic (from the Greek *pandemos*, meaning "of all the people") was noteworthy for more than its enormous extent, however. As it circled the globe, the disease showed a frightening appetite for killing both the young and the strong. And although the medical profession had new confidence about its ability to fight infectious diseases, it stood essentially helpless before this virus.

Despite its forceful wrath, the pandemic was largely forgotten for many decades. Only within the past year or so has it emerged from history's shadows and begun to

attract notice from the nonmedical public. Today, in the opinion of experts, the world is facing the threat of a new influenza pandemic, in the form of an avian (bird) flu virus that has swept across much of Asia and shown an occasional ability to sicken and kill people. Infectious disease researchers fear this potential new pandemic could be more than a faint echo of the 1918 disaster.

American made?

One of the ironies of the "Spanish influenza" is that it most likely did not originate in Spain. Probably the first physician to see a case was Dr. Loring Miner, who practiced on the prairies of Haskell County in western Kansas. As writer John Barry recounts in his 2004 history of the pandemic, *The Great Influenza*, in late January 1918 Miner began seeing patients who suffered from a violent flu; soon he had many patients battling the illness, and some died.

Why the Spanish flu apparently erupted first in Kansas is a mystery. The natural home or "reservoir" for flu viruses is ducks, geese, and other waterfowl, which normally carry them without showing signs of illness. People are not usually susceptible to these avian viruses. But in rare cases, flu viruses from birds find a way to adapt to humans, either through random mutation or by combining with a flu virus already found in humans. This is most likely to happen where people live in close contact with poultry and farm animals, giving viruses plenty of chances to pass among species. Most historical pandemics, including the two most recent

Flu Hits The City of Brotherly Love

In Philadelphia, flu first surfaced in the city's naval base on Sept. 11, 1918. Local officials, including Wilmer Krusen, director of the Department of Health and Charities, expressed confidence that the virus would not spread widely. He did urge people to avoid crowds. Yet against the advice of many, he refused to cancel a huge parade on Sept. 28 to boost sales of federal Liberty Loan bonds to finance the war effort. The parade drew 200,000 people. Two days later Krusen was compelled to

announce, "The epidemic is now present in the civilian population and is assuming the type found in naval stations and cantonments."

Those dry words poorly reflected the horrors of the outbreak. Patients overflowed the regular hospitals, forcing the creation of emergency hospitals, which filled quickly. On Oct. 3, the city ordered the closure of all schools, churches, theaters, and other amusement venues, but it did little good. The disease killed 2,600 in the second week of October and 4,500 in the third week.

Undertakers were overwhelmed; some bodies were not picked up for days, and corpses were piled three and four deep in the city morgue. Eventually the city managed to set up five extra morgues. With that stratagem, and a belated but mighty outpouring of volunteer effort on many fronts, the city barely managed to weather the storm without suffering a complete collapse of essential services. Deaths dropped off sharply by Halloween, but the city had lost more than 11,000 people to the virus.—RR