

What Is a Pandemic?

[David M. Morens](#) [Gregory K. Folkers](#) [Anthony S. Fauci](#)

The Journal of Infectious Diseases, Volume 200, Issue 7, 1 October 2009, Pages 1018–1021,
<https://doi.org/10.1086/644537>

Published:

01 October 2009

The sudden emergence and rapid global spread of a novel H1N1 influenza virus in early 2009 [1] has caused confusion about the meaning of the word “pandemic” and how to recognize pandemics when they occur. Any assumption that the term pandemic had an agreed-upon meaning was quickly undermined by debates and discussions about the term in the popular media and in scientific publications [2–5]. Uses of the term by official health agencies, scientists, and the media often seemed to be at odds. For example, some argued that a level of explosive transmissibility was sufficient to declare a pandemic, whereas others maintained that severity of infection should also be considered [2–5]

Commentators questioned whether we could effectively deal with a pandemic when we could not agree on what a pandemic is or whether we were experiencing one. Amid this discussion, a *New York Times* commentary, published 8 June 2009, struck at the heart of the problem with its challenging headline, “Is This a Pandemic? Define ‘Pandemic’” [5]. Three days later, the World Health Organization (WHO) announced that the pandemic alert for the 2009 H1N1 influenza virus had been raised to its highest level, “phase 6.”

Because it is generally agreed that we are currently in the midst of a global influenza pandemic caused by the novel H1N1 2009 influenza virus, it may now be a good time to ask again: what is a pandemic? Modern definitions include “extensively epidemic” [6], “epidemic ... over a very wide area and usually affecting a large proportion of the population” [7, p. 94], and “distributed or occurring widely throughout a region, country, continent or globally” [8], among others. Although they convey the intuitive idea that a pandemic is a very large epidemic, such definitions still seem vague. Although there seems to be little disagreement that a pandemic is a large epidemic, the question arises whether pandemics must be new, explosive, or severe. Must they be infectious at all? And what if they rapidly spread globally without causing high attack rates? In short, how do we know a pandemic when we see one?

In the 17th and 18th centuries, the terms epidemic and pandemic were used vaguely and often interchangeably in various social and medical contexts. The first known use of the word pandemic, in 1666, referred to “a *Pandemick*, or *Endemick*, or rather a *Vernacular Disease* (*a disease always reigning in a Countrey*)” [9, p. 3]. Two centuries later, in 1828, epidemiologist and lexicographer Noah Webster’s first edition of *Webster’s Dictionary* listed epidemic and pandemic as synonymous terms [10]. Webster, who had lived through the influenza pandemic of 1789–1790, which was the only major American influenza event of his adult lifetime, refers in his dictionary only to epidemic influenza and not to pandemic influenza [10]. Thus, by the early 19th century, the term epidemic, when used as a noun, had become the accepted term for what

we would call today both an epidemic and a pandemic, with the term pandemic falling into increasing disuse

However, as societies were evolving, so too were disease patterns and scientific understanding of how diseases spread. The industrial revolution brought millions of people into urban centers, while clipper ships and steam locomotives dispersed ever-increasing numbers of individuals widely, and even globally. The 1831–1832 cholera pandemic represented the first time that the global spread of an infectious disease was plotted extensively in the popular press, day by day, for more than a year as it progressed inexorably from Asia toward Europe via travel and trade routes. Discovery of the microbial causes of diseases led to vaccines and antisera against them and to widely distributed diagnostic tests to study and monitor diseases at their sources. Under the umbrella of epidemics, the idea of a pandemic thus began to take shape before any specific meaning of the languishing term had become associated with it. When the 1889 influenza pandemic appeared, the concept of a pandemic already existed. The previously vague, imprecise, and infrequently used term was for some reason—perhaps because of influenza’s remarkable explosiveness and the precise tracking of its rapid global spread in 1889 [11]—rescued from near-obscurity and attached to the remarkable global emergence of influenza. Soon thereafter, the term pandemic entered into general use; by 1918, it had become virtually a household word

The 1889 and 1918 influenza pandemics may have temporarily codified the meaning of the word pandemic, but it soon drifted into looseness and imprecision as it began to be used popularly to denote large-scale occurrences of noninfluenza infections and chronic and lifestyle-associated diseases; it thereby returned to a status similar to its former one, denoting almost anything that increased in and appeared to spread within or among groups of people, such as smoking, traffic accidents, factory closings, and even fear [12]. Moreover, with better modern control of such major pandemic diseases as cholera and plague, the term pandemic became closely associated with historical, rather than contemporary, events. In the past 2 decades, many modern medical texts have not even defined the term. Even authoritative texts about pandemics do not list it in their indexes, including such resources as comprehensive histories of medicine [13, 14], classic epidemiology textbooks [15, 16], the Institute of Medicine’s influential 1992 report on emerging infections [17], and acclaimed works about pandemics [18–20]

Describing Pandemics

Even if there is no single accepted definition of the term pandemic, it may still be fruitful to consider diseases commonly said to be pandemic and to try to understand them better by examining similarities and differences among them. Diseases that we might consider—chosen empirically to reflect a spectrum of etiologies, mechanisms of spread, and eras of emergence—include acute hemorrhagic conjunctivitis (AHC), AIDS, cholera, dengue, influenza, plague, severe acute respiratory syndrome (SARS), scabies, West Nile disease, and obesity. In what basic aspects are such pandemic diseases alike and different, and is it possible to identify key features that apply to all or almost all of them?

Wide geographic extension Almost all uses of the term pandemic refer to diseases that extend over large geographic areas—for example, the 14th-century plague (the Black Death), cholera, influenza, and human immunodeficiency virus (HIV)/AIDS. In a recent review of the history of

pandemic influenza coauthored by one of us (D.M.M.), pandemics were categorized as transregional (≥ 2 adjacent regions of the world), interregional (≥ 2 nonadjacent regions), and global [21]

Disease movementIn addition to geographic extension, most uses of the term pandemic imply disease movement or spread via transmission that can be traced from place to place, as has been done historically for centuries (eg, the Black Death). Examples of disease movement include widespread person-to-person spread of diseases caused by respiratory viruses, such as influenza and SARS, or enteric organisms, such as *Vibrio cholerae* or the spread of dengue associated with the extension of the geographic range of vectors, such as *Aedes albopictus* mosquitoes

High attack rates and explosivenessDiseases with indolent rates of transmission or low rates of symptomatic disease are rarely classified as pandemics, even when they spread widely. West Nile virus infection spread from the Middle East to both Russia and the Western hemisphere in 1999; however, this disease spread has not generally been called a pandemic, presumably because attack rates have been moderate and symptomatic cases have been relatively few. Notorious pandemics have tended to exhibit not only high attack rates but also “explosive” spread—that is, multiple cases appearing within a short time. This epidemiologic feature typifies both common-source acquisition and highly contagious diseases of short incubation periods—for example, the 14th-century plague, cholera in 1831–1832, and influenza on many occasions

Minimal population immunityAlthough pandemics often have been described in partly immune populations (eg, evidence for a modest degree of protection in persons >60 years of age in the 1918 influenza pandemic [21]), it is obvious that in limiting microbial infection and transmission, population immunity can be a powerful antipandemic force. However, immunity is a relative concept that does not necessarily imply full protection from infection [22], as is the case for pandemic diseases as different as cholera and influenza associated with new subtypes or drifted strains [1]

NoveltyThe term pandemic has been used most commonly to describe diseases that are new, or at least associated with novel variants of existing organisms—for example, antigenic shifts occurring in influenza viruses, the emergence of HIV/AIDS when it was recognized in the early 1980s, and historical epidemics of diseases, such as plague. Novelty is a relative concept, however. There have been 7 cholera pandemics during the past 200 years, presumably all caused by variants of the same organism; usage clearly dictates that when pandemics come and then disappear for long periods, they are still pandemics when they return. Indeed, pandemicity can be said to be a characteristic feature of certain repeatedly reemerging diseases, such as cholera and influenza

InfectiousnessThe term pandemic has less commonly been used to describe presumably noninfectious diseases, such as obesity [23], or risk behaviors, such as cigarette smoking [24], that are geographically extensive and may be rising in global incidence but are not transmissible. Such uses of the term generally appear less in scientific discussions than they do in public health communication and education, suggesting an intention to stress the importance of the health problem by using the term pandemic in a colloquial rather than scientific sense

Contagiousness Many, if not most, infectious diseases considered to be pandemic by public health officials are contagious from person to person, such as influenza. Other diseases have multiple means of transmission, including those that are occasionally contagious but more commonly transmitted by different mechanisms, such as plague (by fleas) and cholera (by water)

Severity Although disease severity has not been a conventional pandemic criterion [25], the term pandemic has been applied to severe or fatal diseases (eg, the Black Death, HIV/AIDS, and SARS) much more commonly than it has been applied to mild diseases. Diseases of low or moderate severity, such as AHC in 1981, and cyclic global recurrences of scabies (an infestation, not an infection), also have been called pandemic when they exhibit explosive (AHC) or widespread and recurrent (scabies) geographic spread

Conclusions

The examples given above suggest that the pandemic concept, as applied to important global events spanning many centuries, includes diseases of very different etiologies that exhibit a variety of epidemiologic features. There seems to be only 1 invariable common denominator: widespread geographic extension. However, most of the other epidemiologic features noted are common—for example, movement and high attack rates—whereas other variable features, such as noninfectiousness and severity, seem generally out of place. It should not be surprising that, in coming to terms with a new pandemic in 2009, different observers would invoke and emphasize different aspects of older pandemics with which they were familiar

It is ironic that part of the recent problem with pandemic terminology arose not because of inherent vagueness but because of well-meaning attempts to eliminate ambiguities. Decades ago, influenza virologists began to use a highly restricted definition of pandemic that accepted only the introduction and global spread of novel hemagglutinin (HA) subtypes [1]. Even before the 2009 H1N1 infection pandemic, this definition had come largely undone because of increasingly documented global epidemics caused by viruses with HAs of the same subtype, acquired either by reassortment with viruses from a different clade or by antigenic drift [1] (eg, in 2003–2004). Such events cannot, by this definition, be considered to be pandemic, even if they spread just as widely as pandemics associated with new HA subtypes and are just as fatal

When epizootic circulation of a highly pathogenic avian H5N1 virus led, in 2003, to occasional human “spillover” cases associated with 60% fatality [21], the WHO developed a pandemic preparedness plan stipulating, in reference to influenza, that a pandemic agent must be infectious, must be new, must spread easily, and must cause serious illness [26]. In 2005, the WHO further introduced a 6-stage pre-pandemic/pandemic staging system to address influenza [27]. Pandemic “phases” were for the purpose of informing and communicating with the public and ministers of health and triggering public health responses. Indeed, for the past several years, the global health community was tracking the frequently fatal but poorly transmissible H5N1 influenza A virus in anticipation of a pandemic outbreak. Thus, when a relatively nonsevere novel H1N1 virus appeared in April 2009 and then spread widely, many thought that use of the term pandemic—by then, unfortunately associated with a single deadly but nonpandemic virus (H5N1)—was tantamount to triggering a state of alarm not commensurate with the seriousness of the situation. The WHO pointed out that the pandemic influenza phases emphasized geographic distribution of

disease caused by the emergent virus, not its severity, but also moved to quell confusion by introducing discussions of severity in briefings and official documents. Unfortunately, clarity was hard to achieve against the backdrop of long-standing ambiguity

Outside of taxonomic considerations, scientific terminology often arises by habit and usage rather than by choice. Once we have a term, changing it may be difficult, and there is no consensus process for doing so. What are the implications of using a flexible and subjective term that means different things to different observers and varies when applied to different diseases? We note that, during the ongoing H1N1 pandemic, there rarely has been confusion among scientists and public health officials themselves. Problems arose mainly in the translation of complex scientific ideas into publicly comprehensible language, a process that frequently introduces scientific terminology without the caveats and complications that otherwise accompany them. Influencing the public vocabulary regarding scientific concepts remains a formidable task against the backdrop of widespread scientific illiteracy

In summary, simply defining a pandemic as a large epidemic may make ultimate sense in terms of comprehensibility and consistency. We also suggest that use of the term is best reserved for infectious diseases that share many of the same epidemiologic features discussed above. With respect to influenza, the “rules” of pandemicity are again being extensively rewritten and are likely to be modified further in coming months. This may ultimately be a good thing; we expect that improved understanding of the science of influenza—among the most important of the endemic, epidemic, and pandemic diseases—will lead to more-precise and better-understood terminology, as well as to clearer communication

Black Death

pandemic, medieval Europe

Written By: [The Editors of Encyclopædia Britannica](#)

Last Updated: 1-5-2018 [See Article History](#)

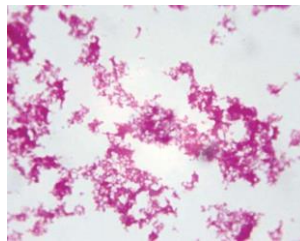
Alternative Title: Great Mortality

Black Death, [pandemic](#) that ravaged [Europe](#) between 1347 and 1351, taking a proportionately greater toll of life than any other known [epidemic](#) or war up to that time.



plague epidemiology: genomic information Researchers using genomic information to trace the transmission routes in past epidemics of plague. *University College Cork, Ireland*

The Black Death is widely believed to have been the result of [plague](#), caused by infection with the [bacterium](#) *Yersinia pestis*. Modern genetic analyses indicate that the strain of *Y. pestis* introduced during the Black Death is ancestral to all [extant](#) circulating *Y. pestis* strains known to cause disease in humans. Hence, the origin of modern plague [epidemics](#) lies in the [medieval](#) period. Other scientific evidence has indicated that the Black Death may have been viral in origin.

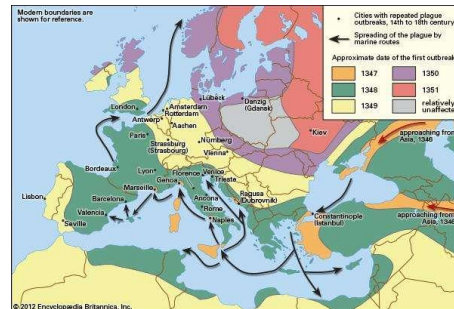


Yersinia pestis A microscopic image shows *Yersinia pestis*, the bacterium that causes plague. © Photodisc/Thinkstock

Origin and incidence

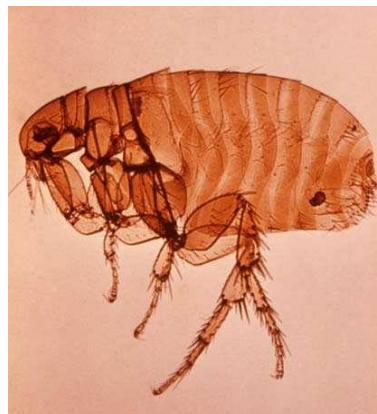
Having originated in [China](#) and Inner Asia, the Black Death decimated the army of the [Kipchak khan Janibeg](#) while he was besieging the [Genoese](#) trading port of Kaffa (now [Feodosiya](#)) in [Crimea](#) (1347). With his forces disintegrating, Janibeg catapulted plague-infested corpses into the town in an effort to infect his enemies. From Kaffa, Genoese ships carried the epidemic westward to Mediterranean ports, whence it spread inland, affecting [Sicily](#) (1347); [North Africa](#),

mainland [Italy](#), [Spain](#), and [France](#) (1348); and [Austria](#), [Hungary](#), [Switzerland](#), [Germany](#), and the [Low Countries](#) (1349). A ship from [Calais](#) carried the plague to [Melcombe Regis](#), [Dorset](#), in [August](#) 1348. It reached [Bristol](#) almost immediately and spread rapidly throughout the southwestern counties of [England](#). [London](#) suffered most violently between February and May 1349, [East Anglia](#) and [Yorkshire](#) during that summer. The Black Death reached the extreme north of England, [Scotland](#), [Scandinavia](#), and the [Baltic countries](#) in 1350.



The second pandemic of the Black Death in Europe (1347–51) *Encyclopædia Britannica, Inc.*

There were recurrences of the plague in 1361–63, 1369–71, 1374–75, 1390, and 1400. Modern research has suggested that, over that period of time, plague was introduced into Europe multiple times, coming along trade routes in waves from [Central Asia](#) as a result of [climate](#) fluctuations that affected populations of [rodents](#) infested with plague-carrying [fleas](#).



Oriental rat flea (*Xenopsylla cheopis*), primary vector for the transmission of the bacterium *Yersinia pestis* between rats and humans. *Centers for Disease Control and Prevention (CDC)*

The rate of [mortality](#) from the Black Death varied from place to place: whereas some districts, such as the duchy of [Milan](#), [Flanders](#), and [Béarn](#), seem to have escaped comparatively lightly, others, such as Tuscany, Aragon, [Catalonia](#), and [Languedoc](#), were very hard hit. Towns, where the danger of contagion was greater, were more affected than the countryside, and within the towns the monastic [communities](#) provided the highest incidence of victims. Even the great and powerful, who were more capable of flight, were struck down: among royalty, Eleanor, queen of [Peter IV](#) of Aragon, and King [Alfonso XI](#) of Castile [succumbed](#), and Joan, daughter of the English king [Edward III](#), died at Bordeaux on the way to her wedding with Alfonso's son. Canterbury lost two successive archbishops, John de Stratford and Thomas Bradwardine;

[Petrarch](#) lost not only Laura, who inspired so many of his poems, but also his patron, [Giovanni Cardinal Colonna](#). The [papal court at Avignon](#) was reduced by one-fourth. Whole communities and families were sometimes [annihilated](#).



Family diary (1340/1360) of Florentine merchant Pepo d'Antonio di Lando degli Albizzi, in which he recorded the deaths of relatives from the Black Death in 1348. *The Newberry Library, Ryerson Fund, 1952*

Consequences

The consequences of this violent [catastrophe](#) were many. A cessation of wars and a sudden slump in trade immediately followed but were only of short duration. A more lasting and serious consequence was the drastic reduction of the amount of land under cultivation, due to the deaths of so many labourers. This proved to be the ruin of many landowners. The shortage of labour compelled them to substitute wages or money rents in place of labour services in an effort to keep their tenants. There was also a general rise in wages for artisans and peasants. These changes brought a new fluidity to the hitherto rigid stratification of society.



Black Death Plague victims during the Black Death, 14th century. *Courtesy of the National Library of Medicine*

The psychological effects of the Black Death were reflected north of the [Alps](#) (not in Italy) by a preoccupation with death and the afterlife evinced in poetry, sculpture, and painting; the [Roman Catholic Church](#) lost some of its monopoly over the salvation of souls as people turned to [mysticism](#) and sometimes to excesses.

[Anti-Semitism](#) greatly intensified throughout Europe as Jews were blamed for the spread of the Black Death. A wave of violent [pogroms](#) ensued, and entire Jewish communities were killed by mobs or [burned at the stake](#) en masse.

The economy of [Siena](#) received a decisive check. The city's population was so diminished that the project of enlarging the cathedral was abandoned, and the death of many great painters, such as [Ambrogio](#) and [Pietro Lorenzetti](#), brought the development of the first Siennese school to a premature end.



Black Death *Blessed Bernard Tolomei Interceding for the Cessation of the Plague in Siena*, oil on copper by Giuseppe Maria Crespi, c. 1735. *Active Museum/Alamy*

In England the immediate effects of the epidemic of 1349 seem to have been of short duration, and the economic decline which reached its nadir in the mid-15th century should probably be attributed rather to the pandemic recurrence of the plague.

The study of contemporary archives suggests a mortality varying in the different regions between one-eighth and two-thirds of the population, and the French chronicler [Jean Froissart](#)'s statement that about one-third of Europe's population died in the epidemic may be fairly accurate. The population in [England](#) in 1400 was perhaps half what it had been 100 years earlier; in that country alone, the Black Death certainly caused the depopulation or total disappearance of about 1,000 villages. A rough estimate is that 25 million people in [Europe](#) died from plague during the Black Death. The population of western Europe did not again reach its pre-1348 level until the beginning of the 16th century.



Black Death A town crier calling for the families of victims of the Black Death to “bring out your dead” for mass burial. *Courtesy of the National Library of Medicine*

The Influenza Pandemic of 1918

The influenza pandemic of 1918-1919 killed more people than the Great War, known today as World War I (WWI), at somewhere between 20 and 40 million people. It has been cited as the most devastating epidemic in recorded world history. More people died of influenza in a single year than in four-years of the Black Death Bubonic Plague from 1347 to 1351. Known as "Spanish Flu" or "La Grippe" the influenza of 1918-1919 was a global disaster.



The Grim Reaper by Louis Raemaekers

In the fall of 1918 the Great War in Europe was winding down and peace was on the horizon. The Americans had joined in the fight, bringing the Allies closer to victory against the Germans. Deep within the trenches these men lived through some of the most brutal conditions of life, which it seemed could not be any worse. Then, in pockets across the globe, something erupted that seemed as benign as the common cold. The influenza of that season, however, was far more than a cold. In the two years that this scourge ravaged the earth, a fifth of the world's population was infected. The flu was most deadly for people ages 20 to 40. This pattern of morbidity was unusual for influenza which is usually a killer of the elderly and young children. It infected 28% of all Americans (Tice). An estimated 675,000 Americans died of influenza during the pandemic, ten times as many as in the world war. Of the U.S. soldiers who died in Europe, half of them fell to the influenza virus and not to the enemy (Deseret News). An estimated 43,000 servicemen mobilized for WWI died of influenza (Crosby). 1918 would go down as unforgettable year of suffering and death and yet of peace. As noted in the Journal of the American Medical Association final edition of 1918:

"The 1918 has gone: a year momentous as the termination of the most cruel war in the annals of the human race; a year which marked, the end at least for a time, of man's destruction of man; unfortunately a year in which developed a most fatal infectious disease causing the death of hundreds of thousands of human beings. Medical science for four and one-half years devoted itself to putting men on the firing line and keeping them there. Now it must turn with its whole might to combating the greatest enemy of all--infectious disease," (12/28/1918).



An Emergency Hospital for Influenza Patients

The effect of the influenza epidemic was so severe that the average life span in the US was depressed by 10 years. The influenza virus had a profound virulence, with a mortality rate at 2.5% compared to the previous influenza epidemics, which were less than 0.1%. The death rate for 15 to 34-year-olds of influenza and pneumonia were 20 times higher in 1918 than in previous years (Taubenberger). People

were struck with illness on the street and died rapid deaths. One anecdote shared of 1918 was of four women playing bridge together late into the night. Overnight, three of the women died from influenza (Hoagg). Others told stories of people on their way to work suddenly developing the flu and dying within hours (Henig). One physician writes that patients with seemingly ordinary influenza would rapidly "develop the most viscous type of pneumonia that has ever been seen" and later when cyanosis appeared in the patients, "it is simply a struggle for air until they suffocate," (Grist, 1979). Another physician recalls that the influenza patients "died struggling to clear their airways of a blood-tinged froth that sometimes gushed from their nose and mouth," (Starr, 1976). The physicians of the time were helpless against this powerful agent of influenza. In 1918 children would skip rope to the rhyme (Crawford):

*I had a little bird,
Its name was Enza.
I opened the window,
And in-flu-enza.*

The influenza pandemic circled the globe. Most of humanity felt the effects of this strain of the influenza virus. It spread following the path of its human carriers, along trade routes and shipping lines. Outbreaks swept through North America, Europe, Asia, Africa, Brazil and the South Pacific (Taubenberger). In India the mortality rate was extremely high at around 50 deaths from influenza per 1,000 people (Brown). The Great War, with its mass movements of men in armies and aboard ships, probably aided in its rapid diffusion and attack. The origins of the deadly flu disease were unknown but widely speculated upon. Some of the allies thought of the epidemic as a biological warfare tool of the Germans. Many thought it was a result of the trench warfare, the use of mustard gases and the generated "smoke and fumes" of the war. A national campaign began using the ready rhetoric of war to fight the new enemy of microscopic proportions. A study attempted to reason why the disease had been so devastating in certain localized regions, looking at the climate, the weather and the racial composition of cities. They found humidity to be linked with more severe epidemics as it "fosters the dissemination of the bacteria," (Committee on Atmosphere and Man, 1923). Meanwhile the [new sciences](#) of the infectious agents and immunology were racing to come up with a vaccine or therapy to stop the epidemics.



The experiences of people in military camps encountering the influenza pandemic:

An excerpt for the memoirs of a survivor at Camp Funston of the pandemic [Survivor](#)

A letter to a fellow physician describing conditions during the influenza epidemic at [Camp Devens](#)

A collection of letters of a soldier stationed in Camp Funston [Soldier](#)

The origins of this influenza variant is not precisely known. It is thought to have originated in China in a rare genetic shift of the influenza virus. The recombination of its surface proteins created a virus novel to almost everyone and a loss of herd immunity. Recently the virus has been reconstructed from the tissue of a dead soldier and is now being [genetically characterized](#). The name of Spanish Flu came from the early affliction and large mortalities in Spain (BMJ,10/19/1918) where it allegedly killed 8 million in May (BMJ, 7/13/1918). However, a first wave of influenza appeared early in the spring of 1918 in Kansas and in military camps throughout the US. Few noticed the epidemic in the midst of the war. Wilson had just given his 14 point address. There was virtually no response or acknowledgment to the epidemics in March and April in the military camps. It was unfortunate that no steps were taken to prepare for the usual recrudescence of the virulent influenza strain in the winter. The lack of action was later criticized when the epidemic could not be ignored in the winter of 1918 (BMJ, 1918). These first epidemics at training camps were a sign of what was coming in greater magnitude in the fall and winter of 1918 to the entire world.

The war brought the virus back into the US for the second wave of the epidemic. It first arrived in Boston in September of 1918 through the port busy with war shipments of machinery and supplies. The war also enabled the virus to spread and diffuse. Men across the nation were mobilizing to join the military and the cause. As they came together, they brought the virus with them and to those they contacted. The virus killed almost 200,00 in October of 1918 alone. In November 11 of 1918 the end of the war enabled a resurgence. As people celebrated Armistice Day with parades and large parties, a complete disaster from the [public health](#) standpoint, a rebirth of the epidemic occurred in some cities. The flu that winter was beyond imagination as millions were infected and thousands died. Just as the war had effected the course of influenza, influenza affected the war. Entire fleets were ill with the disease and men on the front were too sick to fight. The flu was devastating to both sides, killing more men than their own weapons could.



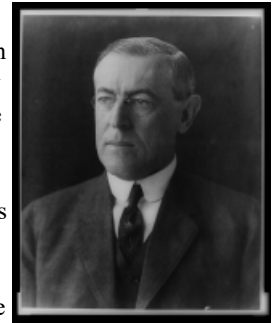
With the military patients coming home from the war with battle wounds and mustard gas burns, hospital



facilities and staff were taxed to the limit. This created a shortage of physicians, especially in the civilian sector as many had been lost for service with the military. Since the medical practitioners were away with the troops, only the medical students were left to care for the sick. Third and fourth year classes were closed and the students assigned jobs as interns or nurses (Starr, 1976). One article noted that "depletion has been carried to such an extent that the practitioners are brought very near the breaking point," (BMJ, 11/2/1918). The shortage was further confounded by the added loss of physicians to the epidemic. In the U.S., the Red Cross had to recruit more volunteers to contribute to the new cause at home of fighting the influenza epidemic. To respond with the fullest utilization of nurses, volunteers and medical supplies, the Red Cross created a National Committee on Influenza. It was involved in both military and civilian sectors to mobilize all forces

to fight Spanish influenza (Crosby, 1989). In some areas of the US, the nursing shortage was so acute that the Red Cross had to ask local businesses to allow workers to have the day off if they volunteer in the hospitals at night (Deseret News). Emergency hospitals were created to take in the patients from the US and those arriving sick from overseas.

The pandemic affected everyone. With one-quarter of the US and one-fifth of the world infected with the influenza, it was impossible to escape from the illness. Even President Woodrow Wilson suffered from the flu in early 1919 while negotiating the crucial treaty of Versailles to end the World War (Tice). Those who were lucky enough to avoid infection had to deal with the public health ordinances to restrain the spread of the disease. The public health departments distributed [gauze masks](#) to be worn in public. Stores could not hold sales, funerals were limited to 15 minutes. Some towns required a signed certificate to enter and railroads would not accept passengers without them. Those who ignored the flu ordinances had to pay steep fines enforced by extra officers (Deseret News). Bodies piled up as the massive deaths of the epidemic ensued. Besides the lack of health care workers and medical supplies, there was a shortage of coffins, morticians and gravediggers (Knox). The conditions in 1918 were not so far removed from the Black Death in the era of the bubonic plague of the Middle Ages.



In 1918-19 this deadly influenza pandemic erupted during the final stages of World War I. Nations were already attempting to deal with the effects and costs of the war. Propaganda campaigns and war restrictions and rations had been implemented by governments. Nationalism pervaded as people accepted government authority. This allowed the public health departments to easily step in and implement their restrictive measures. The war also gave science greater importance as governments relied on scientists, now armed with the new germ theory and the development of antiseptic surgery, to design vaccines and reduce mortalities of disease and battle wounds. Their new technologies could preserve the men on the front and ultimately save the world. These conditions created by World War I, together with the current social attitudes and ideas, led to the relatively calm response of the public and application of scientific ideas. People allowed for strict measures and loss of freedom during the war as they submitted to the needs of the nation ahead of their personal needs. They had accepted the limitations placed with rationing and drafting. The responses of the public health officials reflected the new allegiance to science and the wartime society. The medical and scientific communities had developed new theories and applied them to prevention, diagnostics and treatment of the influenza patients.



[Return to the Top](#)

[Graphs of the Influenza Epidemic Impact](#)



[The Public Health Response](#)

Authoritative Measures
Preventative Measures
Prophylaxis



[The Scientific and Medical Response](#)

Clinical Descriptions
Treatment and Therapy
The Etiology of Influenza



[Bibliography](#)

by Molly Billings, June, 1997 modified RDS February, 2005