



KANSAS
HEALTH
INSTITUTE

Informing Policy. Improving Health.

1918 FLU PANDEMIC: A HUNDRED YEARS' LEGACY

November 2, 2018

Immunize Kansas Coalition

Wichita, KS



View from Kansas Health Institute Offices, Topeka, Kansas



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HELLO, I AM CHARLIE HUNT.

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WHO WE ARE

- Nonprofit, nonpartisan educational organization based in Topeka.
- Established in 1995 with a multi-year grant by the Kansas Health Foundation and located directly across from Kansas Statehouse in downtown Topeka.
- Committed to convening meaningful conversations around tough topics related to health.

TODAY'S AGENDA

1. History of the 1918 Influenza Pandemic
2. Understanding Influenza
3. Prevention and Control
4. Closing Thoughts

1.

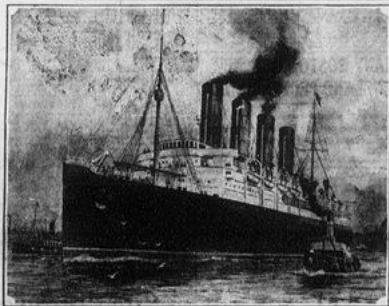
THE 1918 INFLUENZA PANDEMIC





Source: The first page of the edition of the Domenica del Corriere, an Italian paper, with a drawing of Achille Beltrame depicting Gavrilo Princip killing Archduke Francis Ferdinand of Austria in Sarajevo.

FORMER QUEEN OF THE SEAS SUNK BY TORPEDO IN "WAR ZONE"



Answer to Ultimatum to Be Delivered to Minister | Excitement Greater Than Since War Began Fol-
Hoki Tonight Or Sunday. | lows News of Lusitania Disaster

New York, May 7.—Wall street shook from centre to circumference this afternoon, when confirmation of the sinking of the Lusitania was received. Early rumors hinting at the disaster were discredited in many quarters, but later circumstantial details were followed by a general collapse of the stock market, and such excitement as had not been witnessed since the inception of the war.

BELIEVE CHINA WILL NOT REVOLT

[illegible]

NEWS CREATES PAINFUL IMPRESSION

The state's new "Investment" fund was rebuffed this argument and will not be included in the state's budget of 2004. The fund would have been used to finance the state's investment in the state's infrastructure, but the state's investment fund was not included in the state's budget of 2004. The state's investment fund was not included in the state's budget of 2004.

GERMAN'S WARNING AND CUNARD REPLY

The Imperial German embassy published in New York papers of April 28, nine days before the Lusitania sailed on May 1, the following advertisement, as a warning to passengers on Concord and other English steamship lines:

"Travelers embarking on an Atlantic voyage are reminded that a state of war exists between Great Britain and Germany, that the time of war includes that waters adjacent to the British Isles, and that, in accordance with formal notice given by the Imperial German government, vessels flying the flag of Great Britain are liable to destruction in these waters, and that travelers sailing in the war zone on ships of Great Britain do so at their own risk."—Imperial German Embassy, Washington, D. C.

"The Germans have been trying for some time to put English lines out of commission. We anticipate that from this time on every possible means will be used by the Germans to prevent people travelling on English lines. The fact is that the conditions in the safest ship afloat. She is too fast for German submarines, or submarines. She will reach Liverpool as soon as she

"I wonder what will be the Germans next move. It does not look as though they had frightened the people very much with their warnings from the appearance of the passenger liner *the Lusitania*."



SUBMARINE "EYE," SEEING BUT UNSEEN

Operator using the periscope showed a submerged "plunger," and so solving the approach of vessels on the surface. On one or two occasions a submarine has been sunk by a vessel coming up behind it, as the man at the wheel is able only to see that which lies immediately in front. Recently a periscope has been invented that enables the steersman to see "all around."

CITY TAKES SITE FOR SCHOOL HOUSE **NOVELIST THROWN FROM HER HORSE**

**Survivors Landed Believed to Number
Not More Than 500 Out of
Total List of About 2000.**

MANY BOSTON PEOPLE ON
LINER'S PASSENGER LIST

German Embassy Had Given Warning to Passengers—Submarine Sunk Her Prey Off Irish Coast.

Queensown, May 8. 113 A. M.—Survivors of the Comed liner Lusitania, torpedoed by a German submarine off the Irish coast today, landed here late in the night, fear that hundreds of lives have been lost in the sinking of the steamship.

Despatches received from Clonsilla, Kinsale and other points where passengers have been landed, also indicate that the magnitude of the disaster may be appalling. It is certain that

Many of the rescued are terribly injured or suffering from shock and exposure. Everything possible is being done to relieve their condition, and the resources of the authorities and the Cunard company are being taxed.

Only about 30 minutes was given for the work of reason. In that brief time, from all accounts thus far available, the officers of the liner did magnificent work. Most of them, it is believed, gave up their lives to aid the escape of the passengers.

SUBMARINE GAVE NO WARNING

No warning whatsoever was given by the German submarine responsible for the work of destruction. It was sighted by persons on the deck as it rose to discharge two torpedoes.

The passengers were, for the most part at lunch at the time. So sudden was the appearance of the submarine and so quickly did it fulfill the threat made against the Lusitania shortly before it sailed, that no opportunity was given to protect the ship.

SECOND TORPEDO FINISHED HER

Almost immediately afterward the second torpedo was fired into the engine room of the liner. An even more violent explosion followed, and the ship began to settle rapidly.

Within a few minutes, so rapidly and efficiently did the rescue work go on, and so rapidly did the officers work to calm the fears of the passengers, two boats had been lowered, and between 400 and 500 passengers had left the ship.

STEWARDS REPORTS AT LEAST 800 LOST

Most of the details of the disaster were given by a steward who landed in the first boat. He told newspaper men and others here that in his opinion at least 600 lives had been lost.

"I fear that few of the officers were saved," he said. "They

"There was only 14 minutes from the time the ship was struck until she foundered. She went down like a fireman. It was a dreadful sight."

About 120 survivors, principally passengers, have been landed here by the tug Storm Cook. She had on board many women. Two other steamers with survivors are now approaching this port. The Admiralty has received information on the effect that the survivors landed at Kinzade number only about 12. There were about 9000 on board, and the known rescued number only a

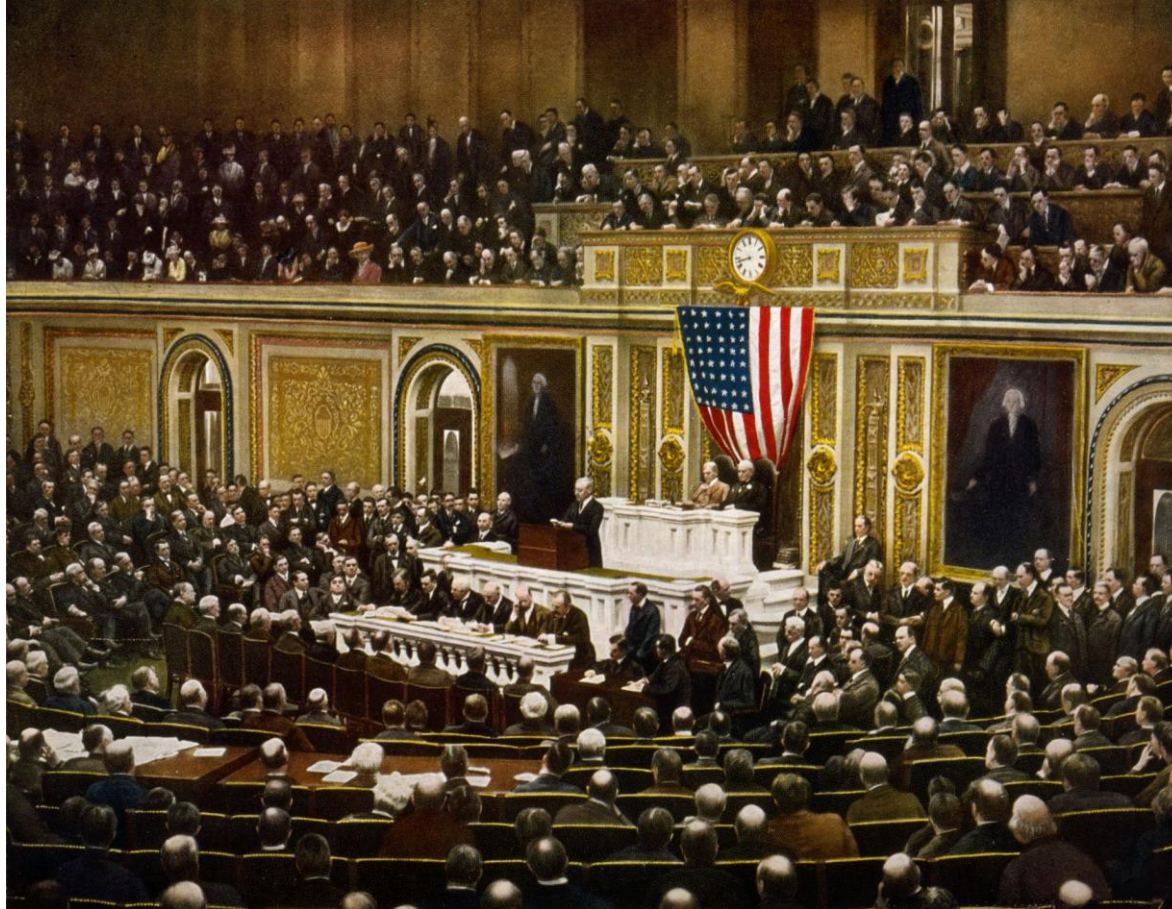
TRAWLERS AND TUG RESCUE 300
Of these, the trawlers Dock and Indian Empire have picked up about 225, and the tug Flying Fish 150. Three torpedo boats have 45 saved and four Indian. Those who have been landed are

Chalmers cared for at hotels and boarding houses, but the common

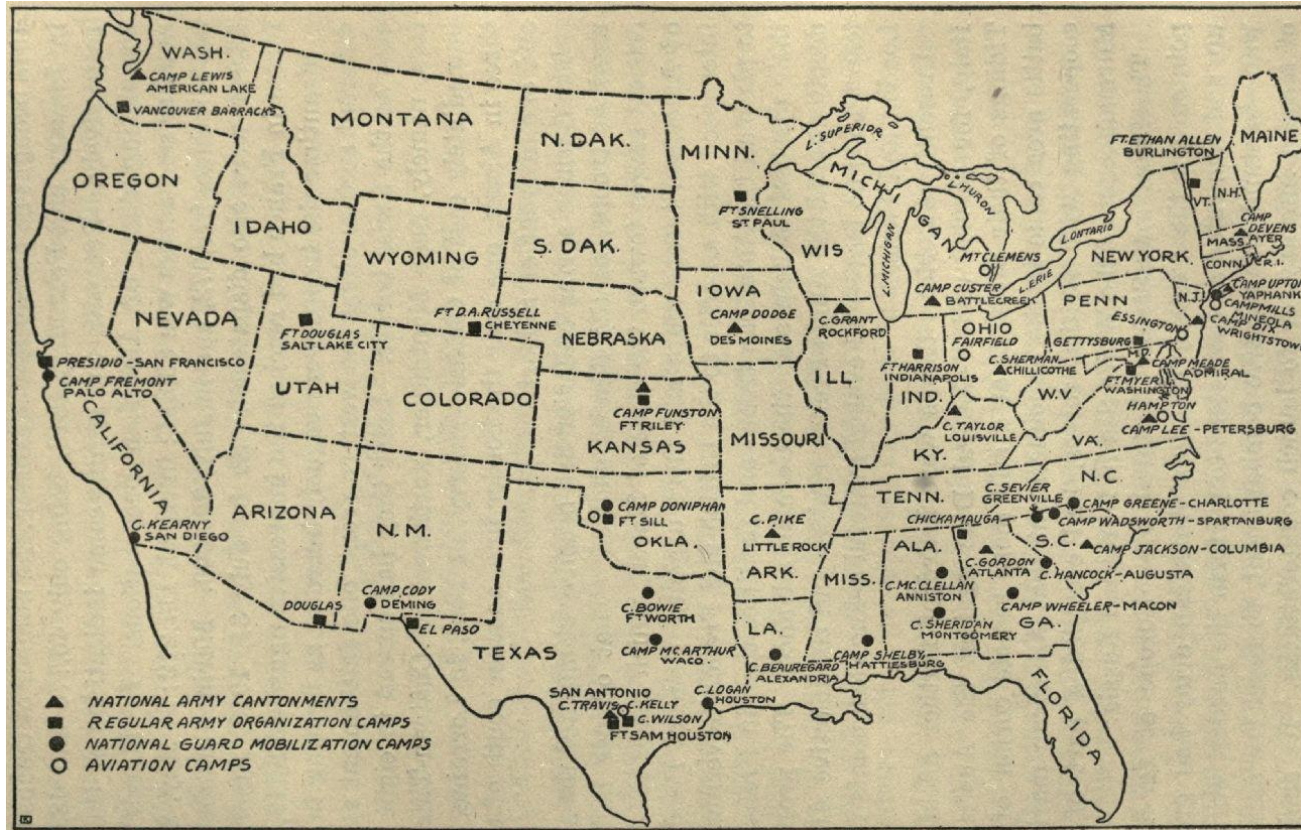
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Source: *Boston Journal* (12 June 2014).

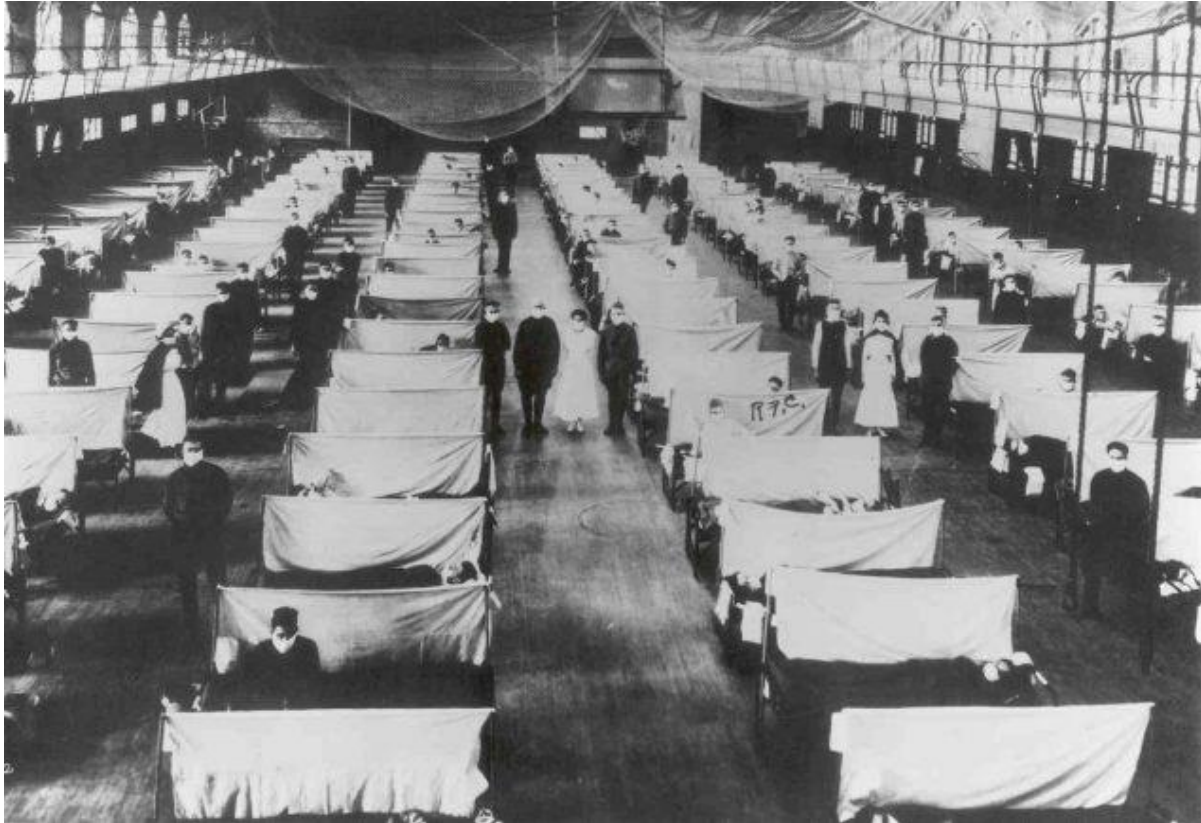


Source: By Unknown - The Library of Congress, Public Domain



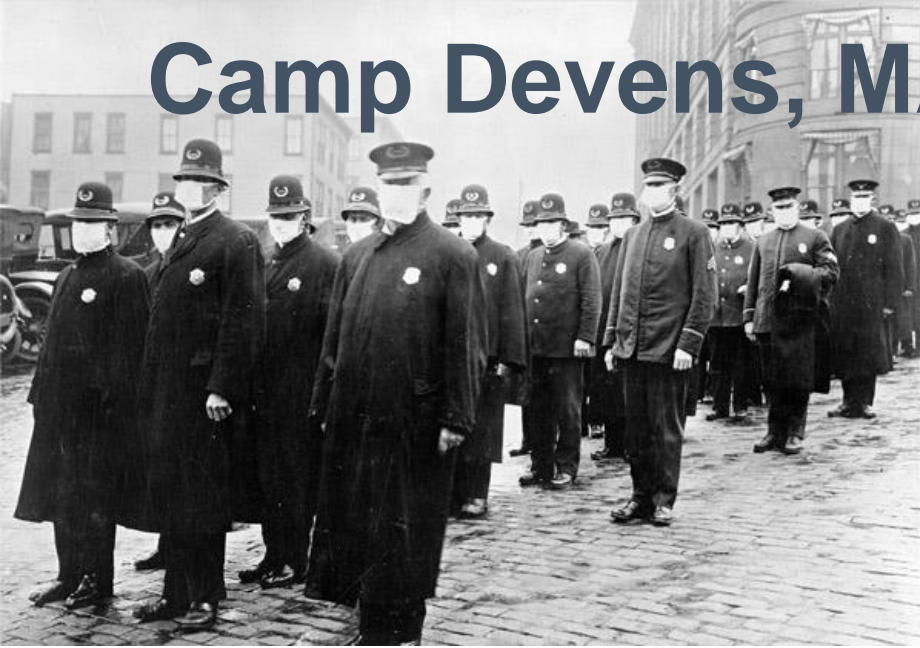
Source: Reynolds F.J., Churchill A.I., & Miller F.T. (Eds.). (1919). The Story of the Great War.

THE FIRST WAVE...



Source: Centers for Disease Control and Prevention.

Camp Devens, MA, September 1918



OCTOBER 1918



Source: Centers for Disease Control and Prevention.

STRATTON D. BROOKS, NORMAN
FEDERAL FOOD ADMINISTRATOR FOR OKLAHOMA

PAUL COTTRELL, NORMAN
EXECUTIVE SECRETARY

UNITED STATES FOOD ADMINISTRATION

COUNTY ADMINISTRATION DEPARTMENT
OKLAHOMA

Wilburton Oklahoma
Oct 3rd 1918.

Hon. C.B. Ames,
Fed. Food Admr.
Oklahoma City,

Dear Sir:

Re: Telegram to call meeting of ginners.

On account of the enormous amount of Spanish Influenza here it is impossible to call any public meetings. There are three hundred cases in this town and neighborhood. So as the ginners are very busy I made it a point to call on each one in the county in person and explain the importance of obeying all rules and regulations laid down by the administration.

Yours for the Loan,

Jack Kelley
Lat. County Food Admr.

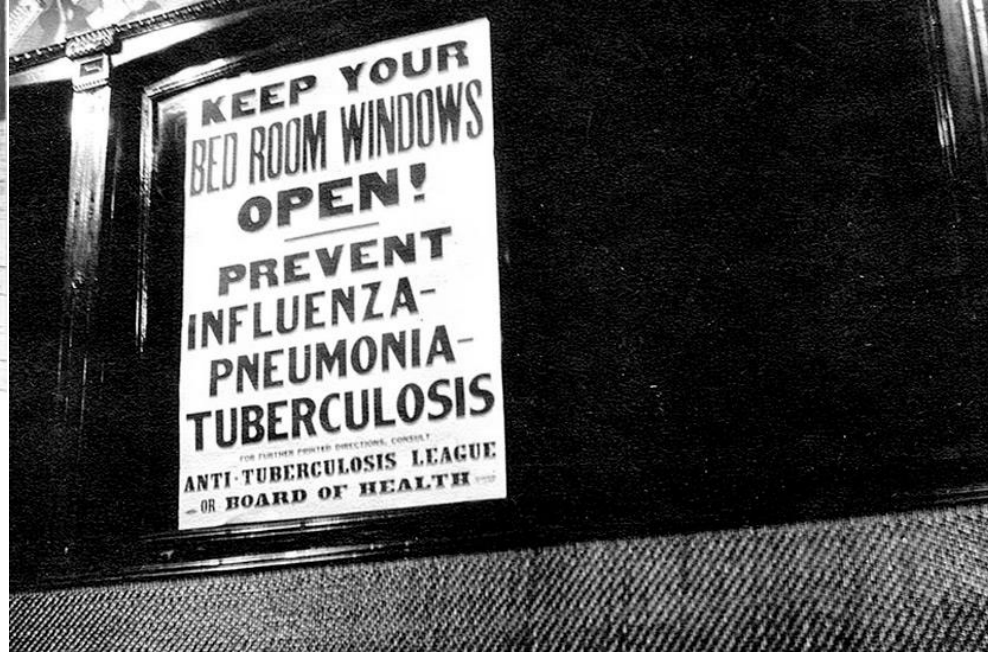
BOND

ARMISTICE DAY: NOVEMBER 11, 1918



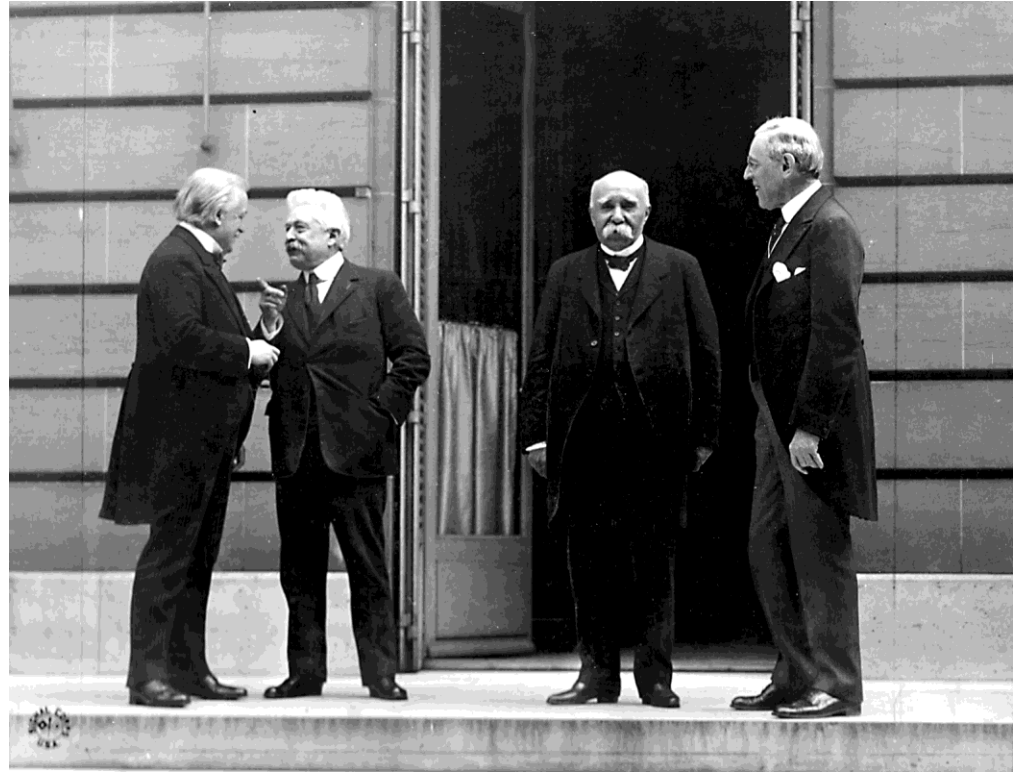
Source: Library Company of Philadelphia

DECEMBER 1918



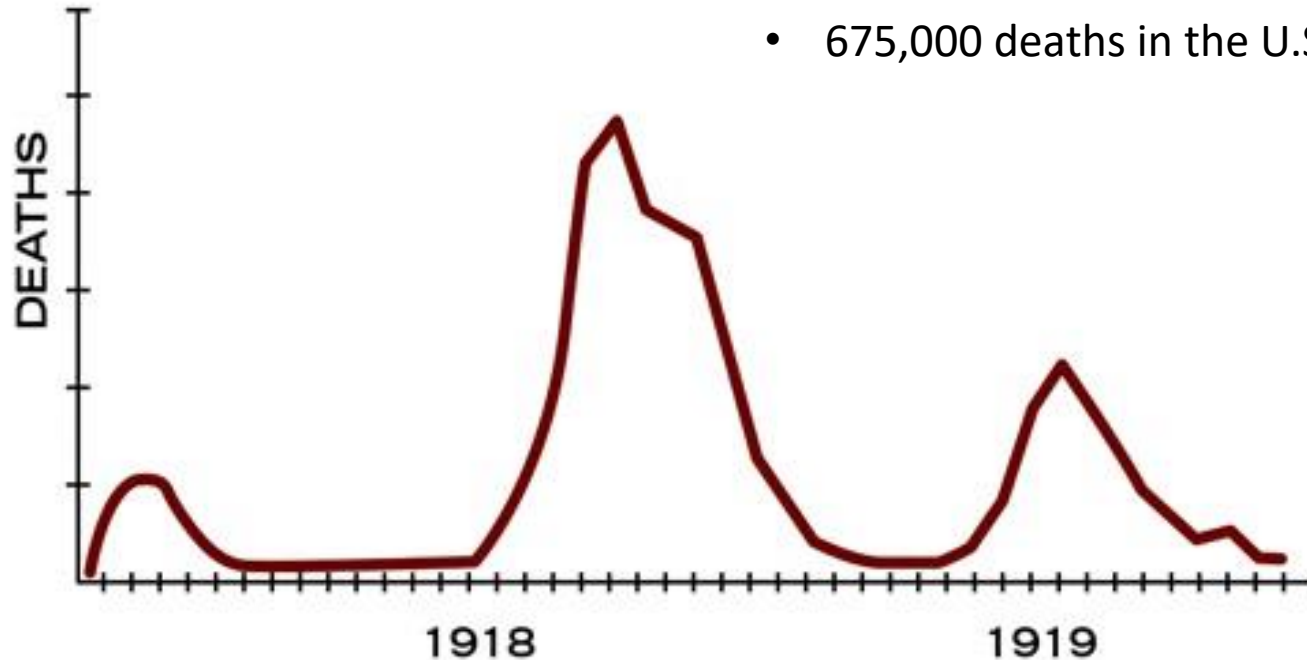
WINTER-SPRING 1919

- Third wave kills many more
- Woodrow Wilson collapse at Treaty of Versailles?



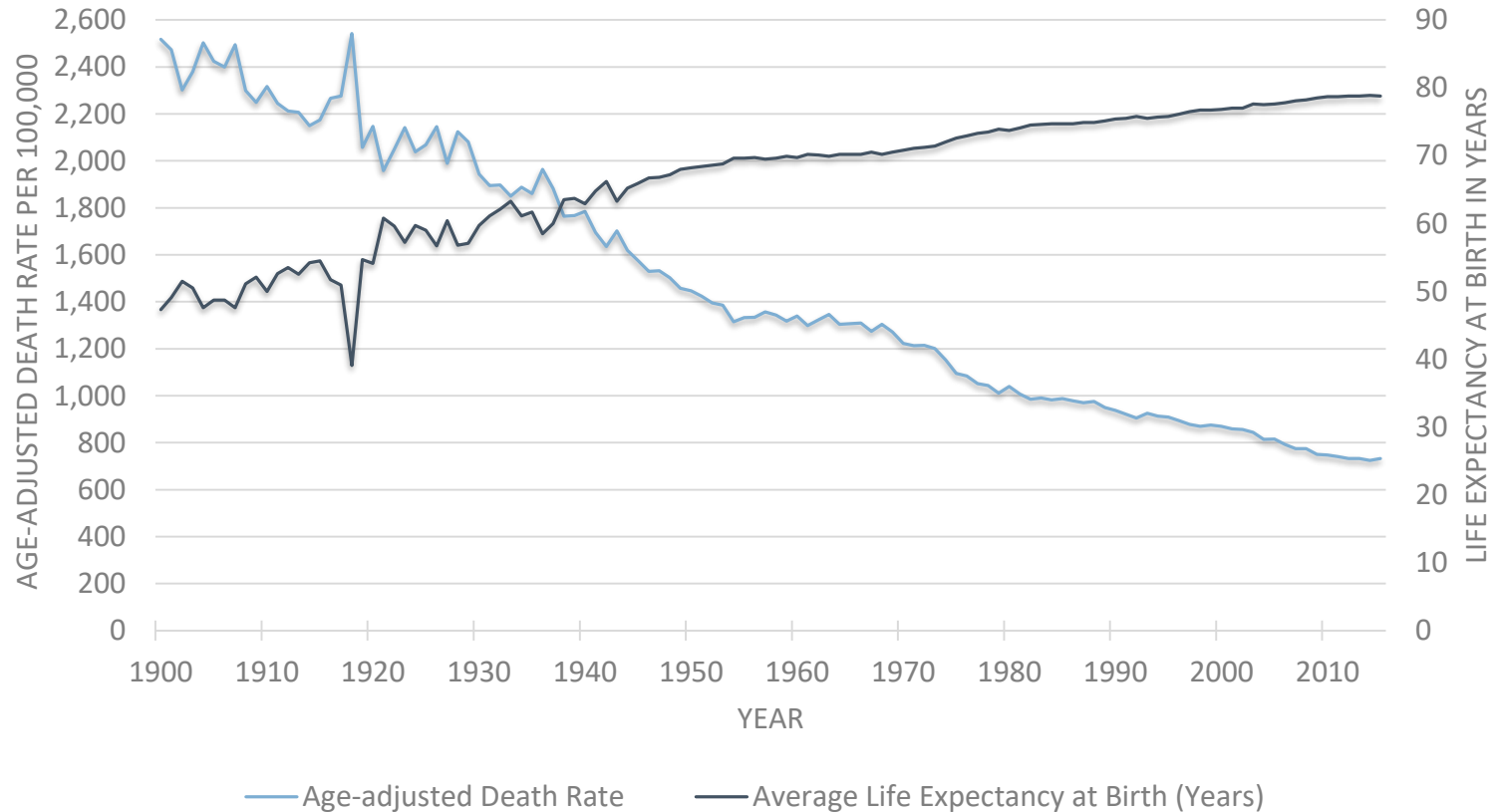
THREE WAVES OF THE PANDEMIC

- 1/3 of worldwide population infected
- 50 million deaths worldwide
- 675,000 deaths in the U.S.



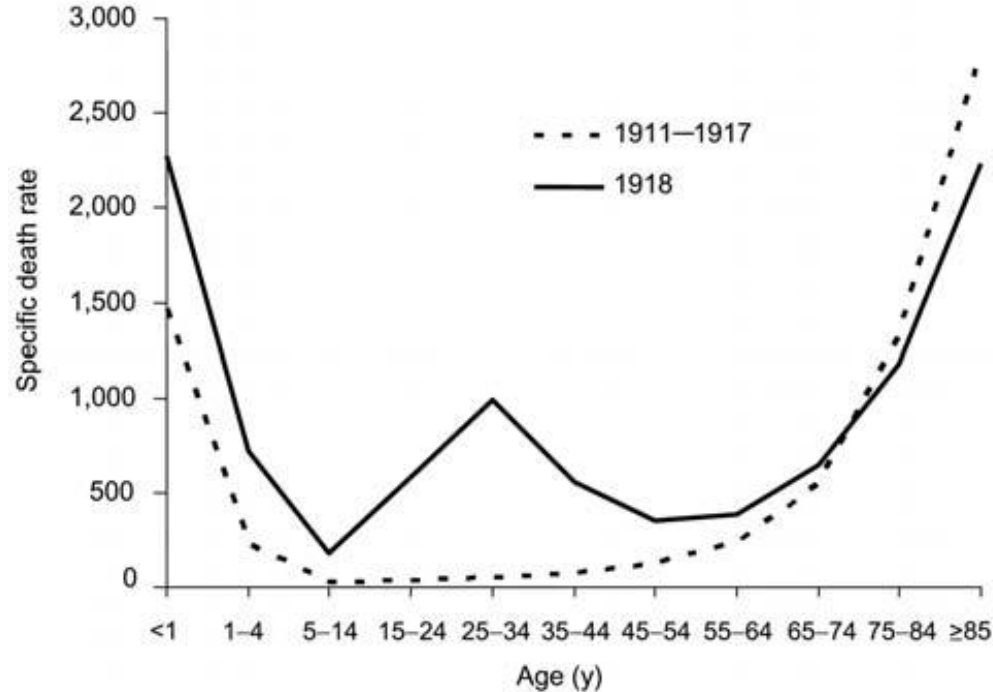
Source: Centers for Disease Control and Prevention

Age-adjusted Death Rate and Life Expectancy at Birth, United States, 1900-2015



Source: CDC/NCHS: National Vital Statistics System.

INFLUENZA MORTALITY RATES BY AGE IN THE U.S., 1911-1917 AND 1918



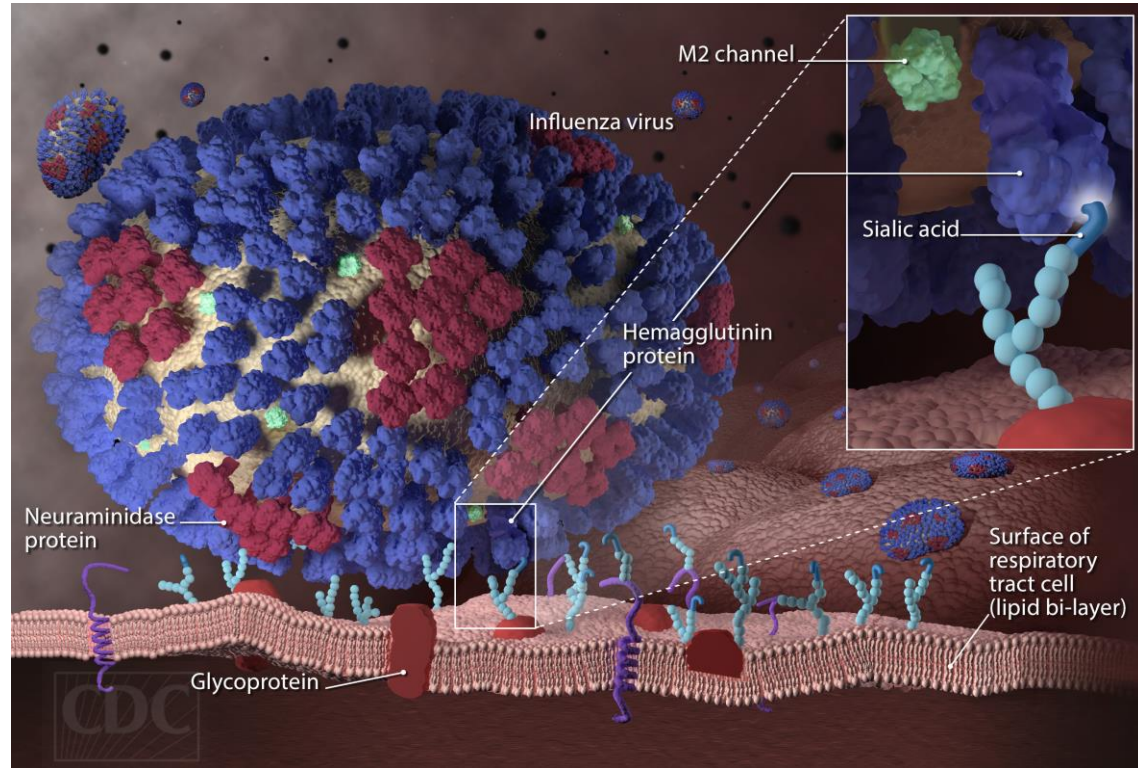
Source: Taubenberger, J.K. & Morens, D.M. (2006). *Emerging Infectious Diseases*.

2.

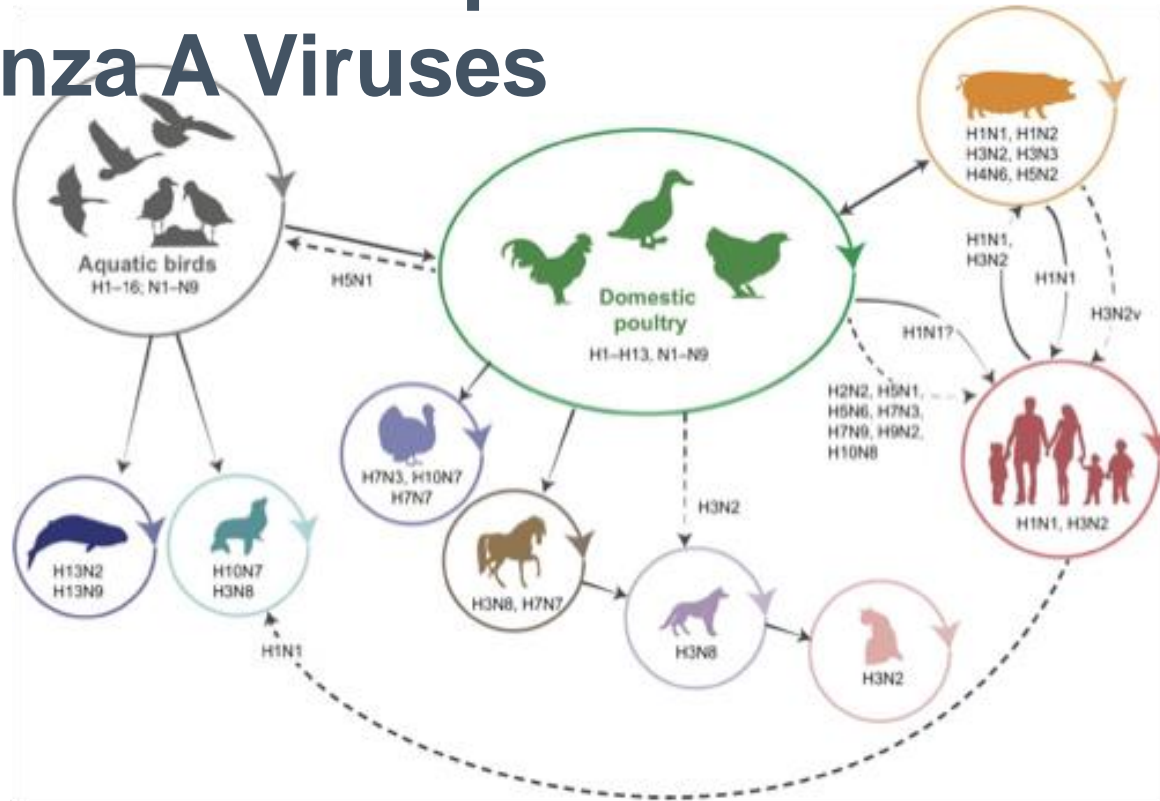
UNDERSTANDING INFLUENZA

INFLUENZA VIRUS

- First isolated in 1933
- Types: A, B, C & D
 - A & B infect humans
- Subtypes: H & N
- 1918 pandemic virus was H1N1

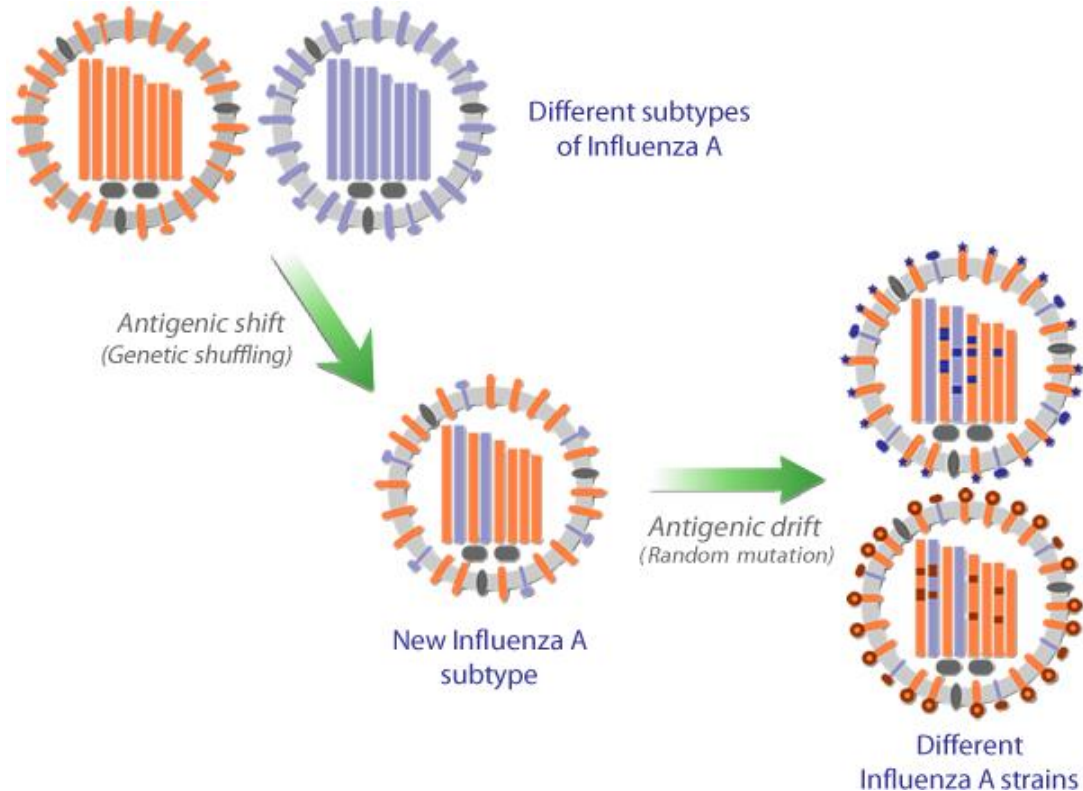


Significant Interspecies Transmission Of Influenza A Viruses



Source: Joseph, U., Su, Y. C. F., Vijaykrishna, D. and Smith, G. J. D. (2017), *The ecology and adaptive evolution of influenza A interspecies transmission. Influenza and Other Respiratory Viruses* 11, 74–84.

INFLUENZA BIOLOGY



*Source: WHO Collaborating Centre for Reference and
Research on Influenza*

INFLUENZA MILESTONES

1917 - 2009



1917

United States enters World War I. U.S. life expectancy is 54 years for women, 48 years for men.



1919

Third wave of pandemic flu activity occurs. Pandemic subsides, but virus (H1N1) continues to circulate seasonally for 38 years.



1957

H2N2 flu virus emerges to trigger a pandemic, replacing the 1918 H1N1 pandemic virus.



1968

H3N2 flu virus emerges to trigger a pandemic, replacing H2N2 virus.



2009

H1N1 viruses distantly related to the 1918 virus emerge to trigger a pandemic.

1918

Spring and fall waves of influenza ("flu") activity cause the average life expectancy in the United States to fall by 12 years.



1930

First isolation of influenza, proving that flu is caused by a virus not a bacterium.



1960

The U.S. Public Health Service recommends annual flu vaccination for people at high risk of serious flu complications.



2005

Genome of the 1918 pandemic flu virus is fully sequenced.



U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention



DEPARTMENT OF HEALTH
AND ENVIRONMENT

Kathleen Sebelius, Governor
Roderick L. Bremby, Secretary

www.kdheks.gov

For Immediate Release
April 25, 2009

KDHE Office of Communications
kdhe.Communications@ks.gov, 785-296-0461

KDHE Reports 2 Cases of Swine Flu in Kansas

The Kansas Department of Health and Environment (KDHE) announced today that two cases of swine flu have been confirmed in Kansas involving two adults residing in the same household in Dickinson County. Neither of the patients was hospitalized - one is still ill and being treated, and one is recovering.

One of the patients had recently traveled to Mexico, flying in and out of Wichita. Both persons work in Saline County and became ill with the same unique (H1N1) strain of swine flu that has been identified in Mexico, California and Texas.

"It's not yet known whether this will become the next flu pandemic," stated Dr. Jason Eberhart- Phillips, State Health Officer and Director of the KDHE Division of Health. "We are working closely with health agencies at all levels and are continuing to monitor these cases. We are taking this situation very seriously."

KDHE and the Dickinson County Health Department are investigating the sources of exposure, and efforts are being coordinated with the Centers for Disease Control and Prevention (CDC). Individuals who have been in contact with the patients are being interviewed and tested. Local health departments and hospitals in Kansas are being continuously updated and provided with information about the swine flu virus.

KANSAS PANDEMIC INFLUENZA PREPAREDNESS AND RESPONSE PLAN

Version 2.3
January 2016



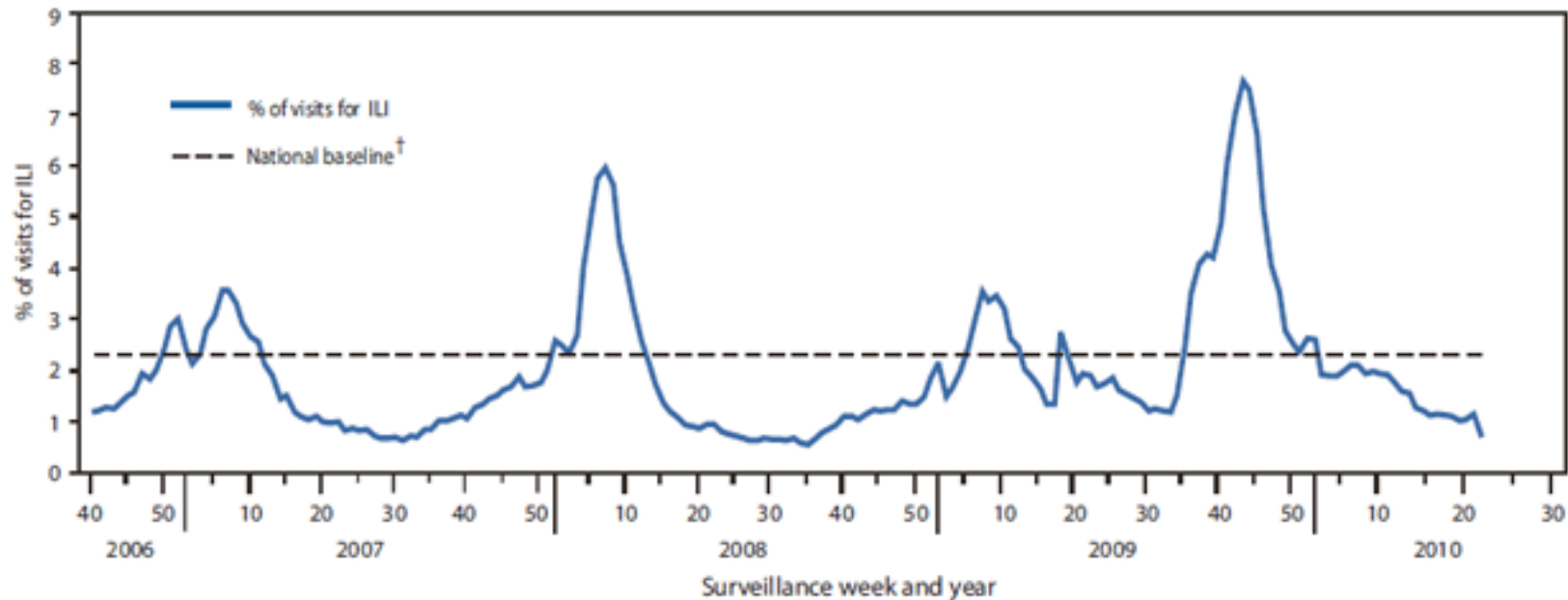
Source: Kansas Department of Health and Environment

KDHE EMERGENCY OPERATIONS CENTER: 19 MAY 2009



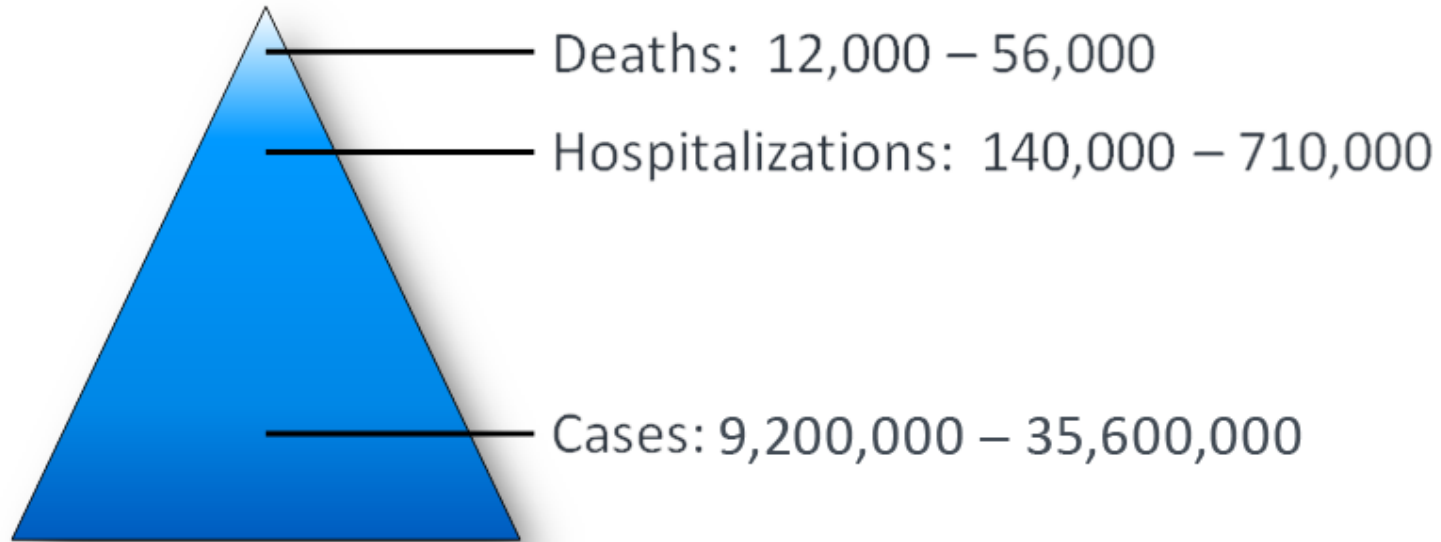
Source: Kansas Department of Health and Environment

Percentage of outpatient visits for influenza-like illness (ILI), by week and year --- U.S. Outpatient influenza-like illness surveillance network (ILInet), October 1, 2006--June 12, 2010



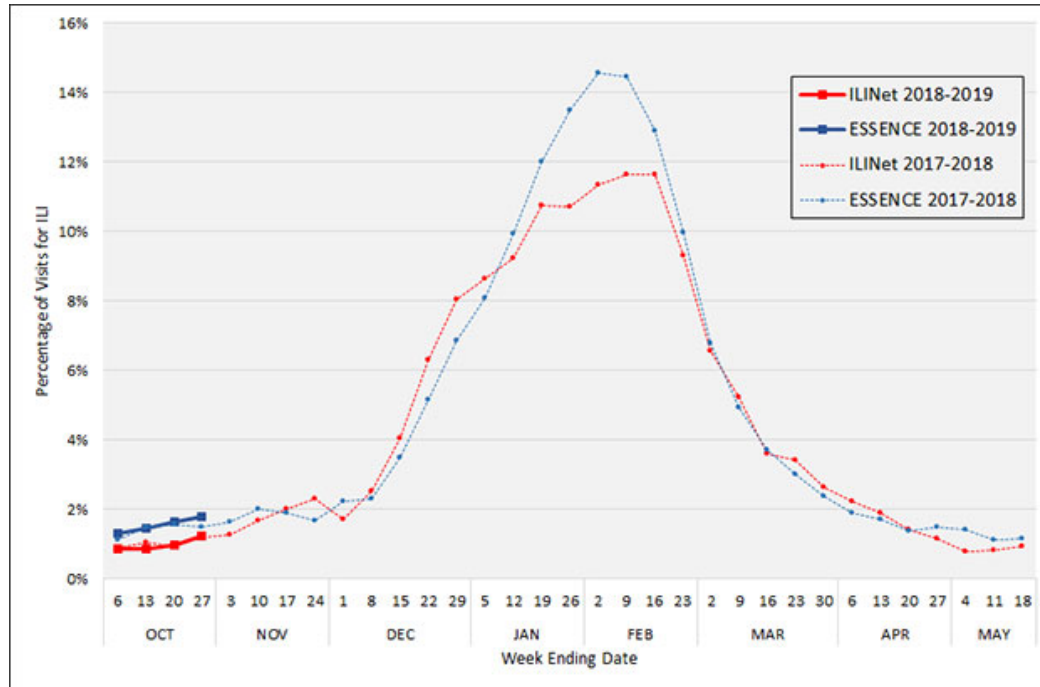
Source: CDC. (2010). *Morbidity and Mortality Weekly Report*, 59(29);901-908.

ANNUAL BURDEN OF SEASONAL INFLUENZA



Source: Centers for Disease Control and Prevention

Percentage of visits for influenza-like illness (ILI) reported by ILINet* sites and ESSENCE**, Kansas, October 2017 - present



Source: Kansas Department of Health and Environment

3.

PREVENTION AND CONTROL OF INFLUENZA

TRANSMISSION OF INFLUENZA

- Sneezing
- Coughing
- Direct contact (e.g., kissing)
- Objects (less often)
- 1 day before to 5-7 days after illness





TAKE ACTION TO PREVENT THE FLU.



Source: Centers for Disease Control and Prevention

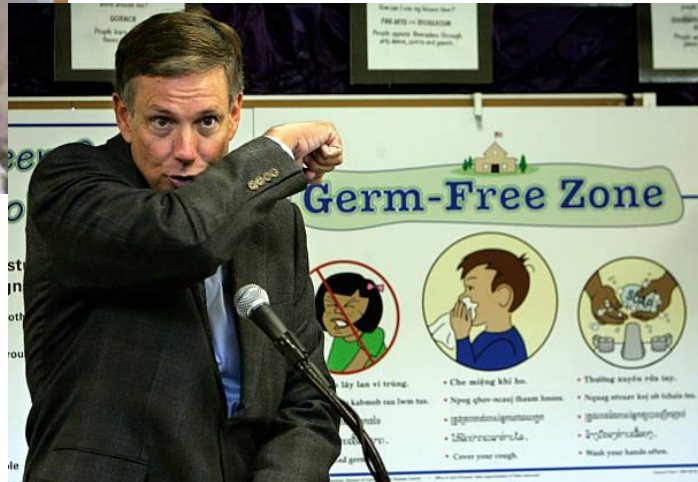
INFLUENZA VACCINATION

- Recommended annually for nearly everyone 6 months and older
- Several vaccines available
- Get vaccinated as soon as possible!

BENEFITS OF INFLUENZA VACCINATION

- People who are vaccinated are generally:
 - Less likely to become ill
 - Have a milder illness even if they do become ill
 - Less likely to be hospitalized
- Protects pregnant women and those with chronic health conditions

OTHER WAYS TO PREVENT SPREADING INFLUENZA



- Wash your hands
- Cover coughs and sneezes
- Stay home when ill

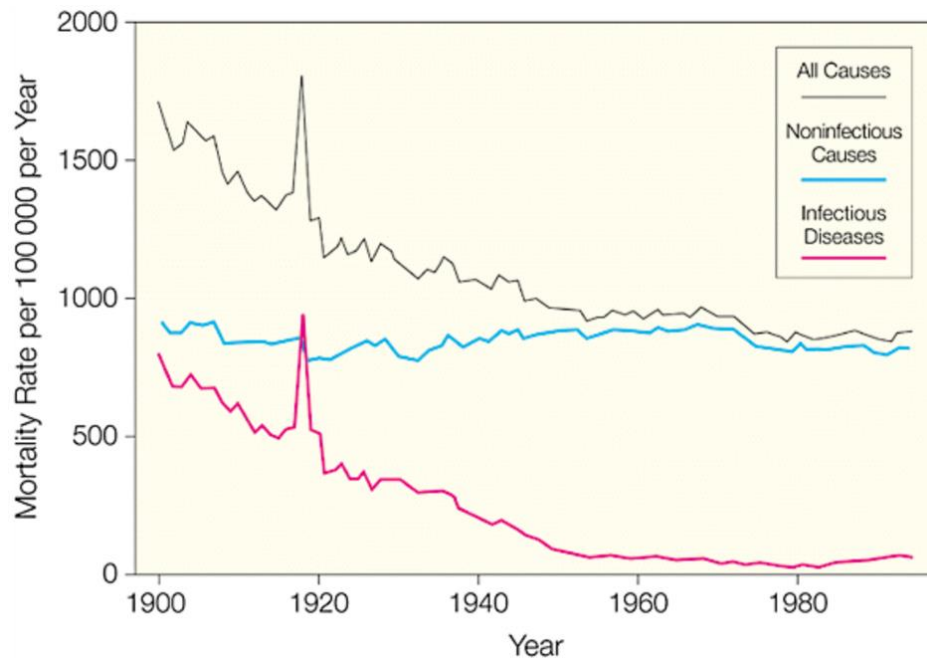
ANTIVIRAL DRUGS

- Available by prescription only
- Work best if started within 2 days of becoming ill
- May reduce symptoms and risk of severe illness or complications

4.

CLOSING THOUGHTS

CRUDE MORTALITY RATES FOR ALL CAUSES, NONINFECTIOUS CAUSES AND INFECTIOUS DISEASES IN THE UNITED STATES, 1900-1996

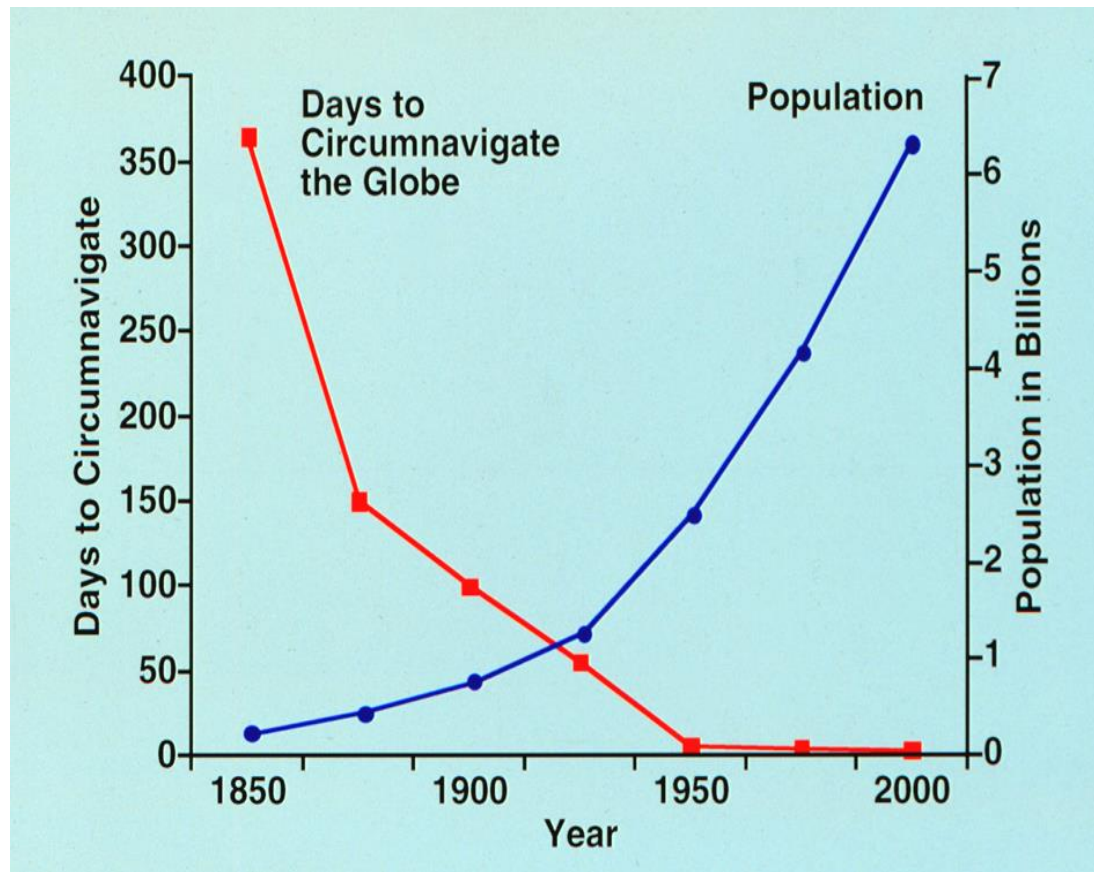


Source: JAMA. 1999;281(1):61-66. doi:10-1001/pubs.JAMA-ISSN-0098-7484-281-1-joc80862

“

“One can think of the middle of the twentieth century as the end of one of the most important social revolutions in history, the virtual elimination of the infectious diseases as a significant factor in social life”

-Nobel Laureate Sir Frank Macfarlane Burnet
Natural History of Infectious Disease (1962)



Source: Murphy, F. A., & Nathanson, N. (1994). *The emergence of new virus diseases: an overview*. *Sem Vir*, 5, 87-102.

AIRLINE ROUTES, 2014



Source: openflights.org



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THANK YOU

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