INFLUENZA UNMASKED: A VIRAL JOURNEY THROUGH HISTORY

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NORTH Dakota Be Legendary.

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OBJECTIVES

- Upon completion of this presentation, the participant will be able to:
  - Summarize the history of influenza outbreaks in North Dakota.
  - Identify the signs and symptoms of influenza and “flumps.”
  - Describe influenza testing and sub-typing.
  - Justify the benefits of influenza surveillance programs.
  - Describe how influenza vaccinations are developed each year.

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Symptoms

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TAXONOMY

- Family: Orthomyxoviridae
- Genre:
  - A
  - B
  - C
- Naming
  - Antigenic Type
  - Host of Origin
  - Geographical Origin
  - Strain Number
  - Year of Isolation
  - For influenza A viruses:
    - (H1N1), (H5N1)

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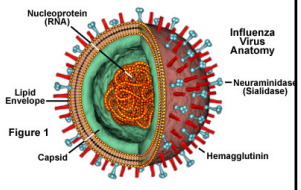
WHAT’S IN A NAME?

Virus type | Strain number | Virus subtype

A / Beijing / 32 / 92 (H3N2)

Geographic origin | Year of Isolation



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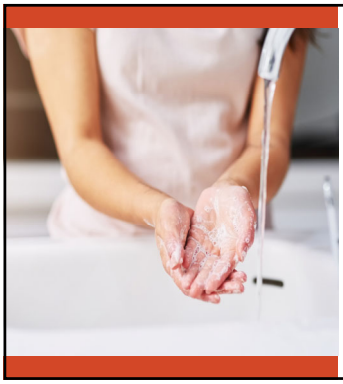

- Replication
  - Quick – 6 hours
- Infectivity
  - Temperature
  - pH
  - Salinity of the water
- Disinfection
  - Chlorine
  - Hypochlorite
  - Alcohols
  - Temperatures > 70 °C

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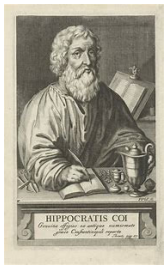
INFLUENZA PANDEMICS

- The first documented case of influenza dates back to ancient times
- 412 BC



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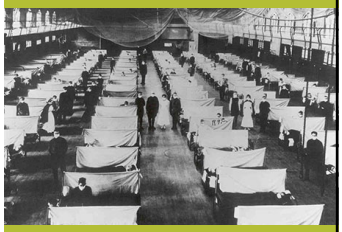
SPANISH FLU, 1918

- World Wide
  - 20% of people infected
  - ↑ 25% mortality
- United States
  - 675,000 deaths
  - 50% of soldiers died during the war



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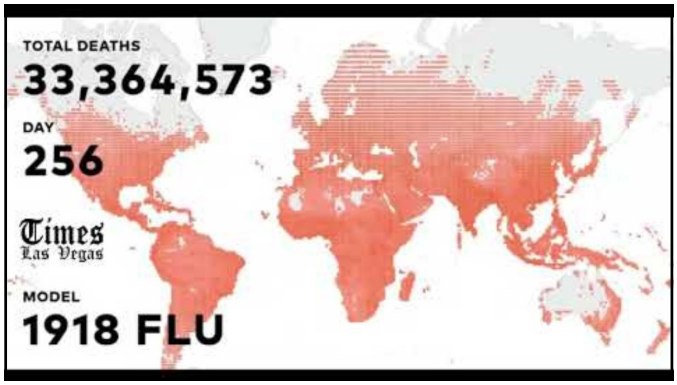

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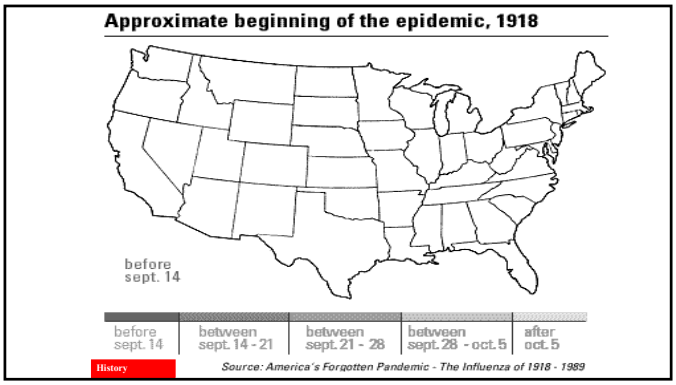

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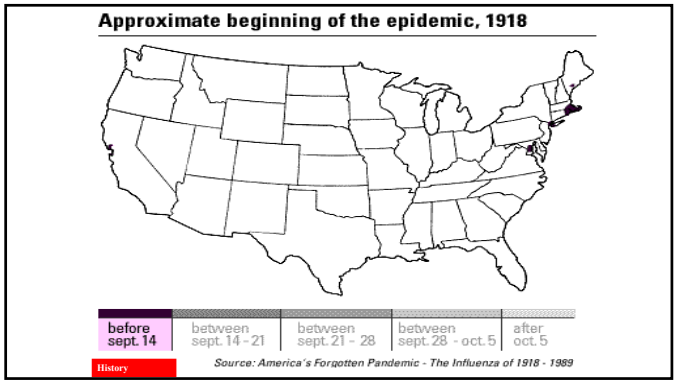

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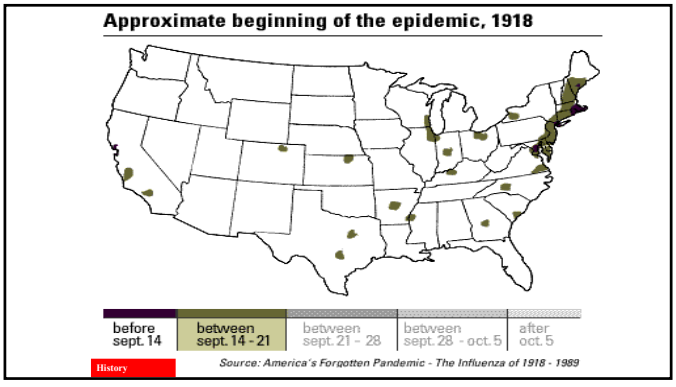

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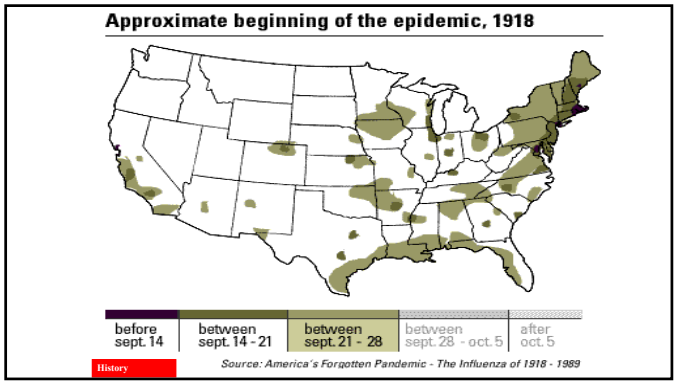

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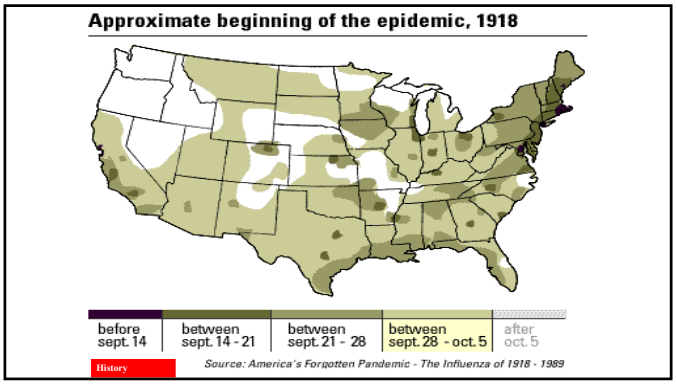

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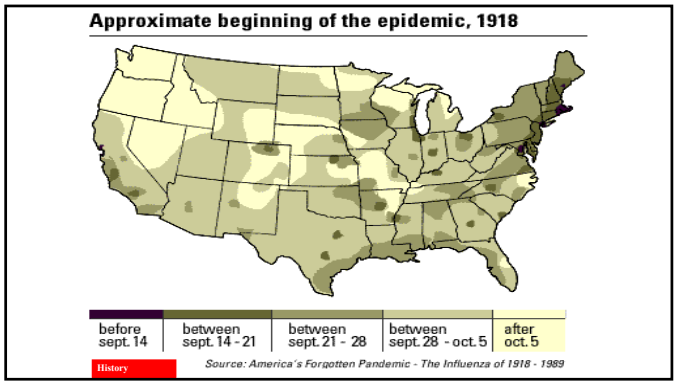

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IMPACTS OF INFLUENZA

- Stanley Cup Finals
- Us Presidential Election

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SPANISH FLU IN NORTH DAKOTA

- Started in New Rockford, September 14th (Bismarck Tribune)
- No cases in September 27th, 1918 (Fargo Forum)
- Warned of threat, Fargo, Oct 4th
- 100 cases, Fargo, October 4th
- 1000 cases, Jamestown, October 5th
- Late November, 1918 decline in reported cases
- Spring, 2019 cases diminished
- 1,378 deaths in ND (McDonough, 2017)

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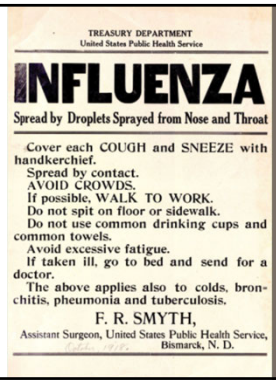
1920 STATE BOARD OF HEALTH BIENNIAL REPORT

- Burleigh County:

"suffered severely and the mortality was very high"


TREASURY DEPARTMENT
United States Public Health Service

INFLUENZA

Spread by Droplets Sprayed from Nose and Throat

Cover each COUGH and SNEEZE with handkerchief.
Spread by contact.
AVOID CROWDS.
If possible, WALK TO WORK.
Do not spit on floor or sidewalk.
Do not use common drinking cups and common towels.
Avoid excessive fatigue.
If taken ill, go to bed and send for a doctor.
The above applies also to colds, bronchitis, pneumonia and tuberculosis.

F. R. SMYTH,
Assistant Surgeon, United States Public Health Service,
Bismarck, N. D.

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SYMPTOMS

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CASES ACROSS NORTH DAKOTA

- Florence Kimball
- AJ Anderson
- Bill Kruger, Sr.
- Alma Munkeby

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THELMA THROM

- "the main this was to loosen up the phlegm."
- "never a child after that"

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ASIAN FLU 1957

- H2N2
- Approximately 1 to 2 Million deaths world wide
- Approximately 60,000 U.S. deaths in the U.S.
- Duck and human virus genes

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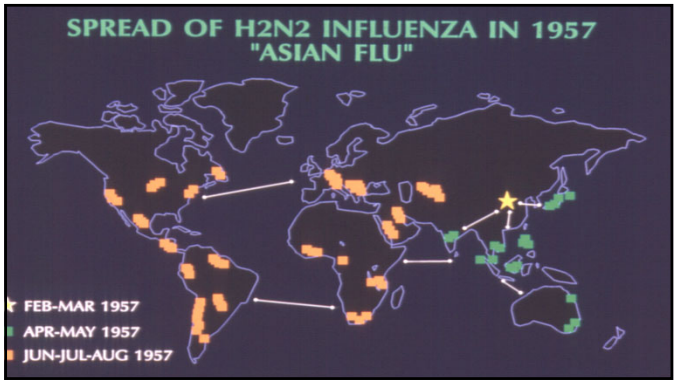

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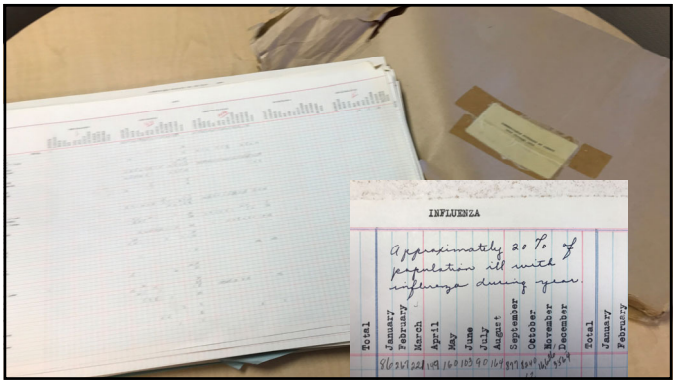

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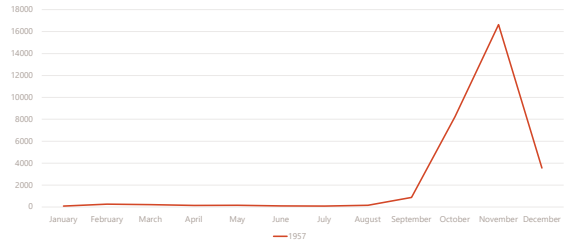
ASIAN FLU 1957



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HONG KONG FLU 1968

- H3N2
- Approximately 1 Million deaths worldwide
- Approximately 40,000 deaths in the United States
- Duck and human virus genes

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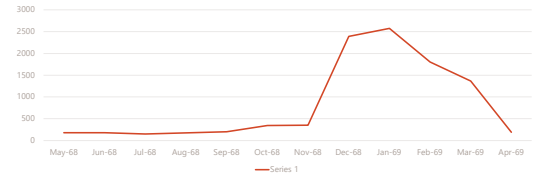
HONG KONG FLU 1968 THROUGH 1969



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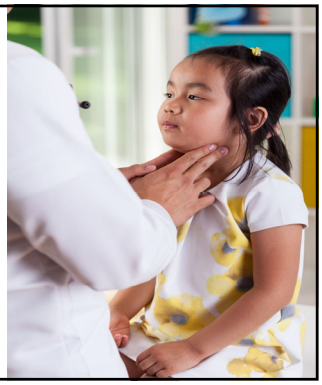
FLUMPS!

- Mumps negative
- Influenza positive
- Parotitis
- Respiratory symptoms
- H3N2 strain



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2009 H1N1

- Worldwide
  - 24% of people infected
  - 0.02% mortality
  - 14,140 (lab confirmed) deaths reported world wide
- United States
  - Entered into US via Mexico

(Maddox, 2018)

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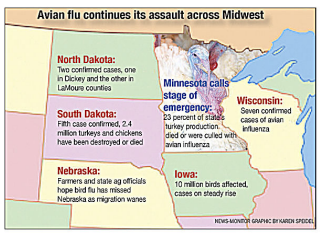
BIRD FLU IN TURKEYS 2015

- Commercial Turkey Flock
- Dickey and Lamoure County
- Increased mortality
- NDSU Veterinary Diagnostic Lab
- H5NX Avian Influenza
- "The risk to people from H5 avian influenza infections is low despite the disease often being fatal for birds." – Tracy Miller



(AgWeek, 2015; Speidel, 2015)

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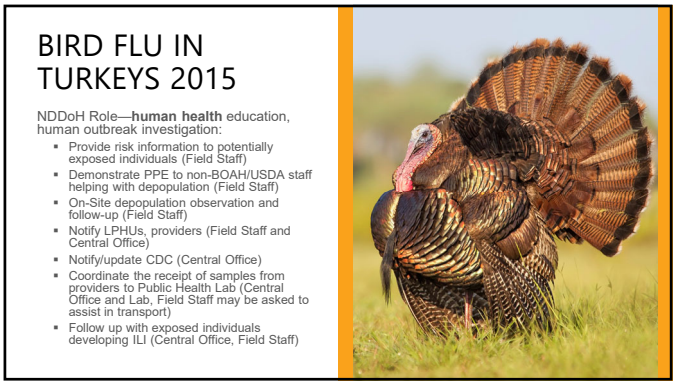

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H3N2V 2017

- 1st Variant influenza cases in ND
- Exposure to pigs at the North Dakota State Fair
- 50 cases in the U.S.

(The Pump Handle, 2017)

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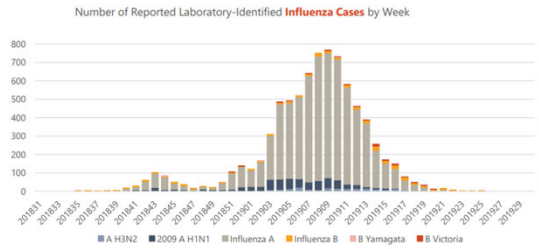
INFLUENZA 2018-2019



(2017-2018 Reported Seasonal Influenza Activity in North Dakota)

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CURRENT INFLUENZA SEASON (LAST WEEK)

Summary

Viruses

Clinical Lab	Public Health Lab
5.6% (Trend ⬇) positive for influenza this week.	Influenza A(H1N1)pdm09, A(H3N2), and B viruses were co-circulating this week.

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FUTURE CONCERNS

- CDC's Influenza Risk Assessment Tool
  - Viral properties
  - Population attributes
  - Viral ecology
- Influenza A (H7N9)
  - Emerged in China, 2013
  - Rated as "Moderate-High" Risk
  - ~ 40% mortality
  - Infected poultry

(Maddox, 2018)

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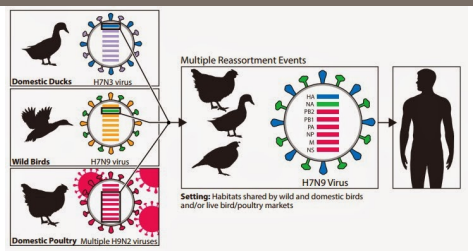
INFLUENZA H7N9



(Cunha, 2004; Image From: http://influenza-news.blogspot.com/2013/11/genetic-evolution-of-influenza-ah7n9.html)

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WHO - Ten things you need to know about pandemic influenza

1. Pandemic influenza is different from avian influenza.
2. Influenza pandemics are recurring events.
3. The world may be on the brink of another pandemic.
4. All countries will be affected.
5. Widespread illness will occur.
6. Medical supplies will be inadequate.
7. Large numbers of deaths will occur.
8. Economic and social disruption will be great.
9. Every country must be prepared.
10. WHO will alert the world when the pandemic threat increases.

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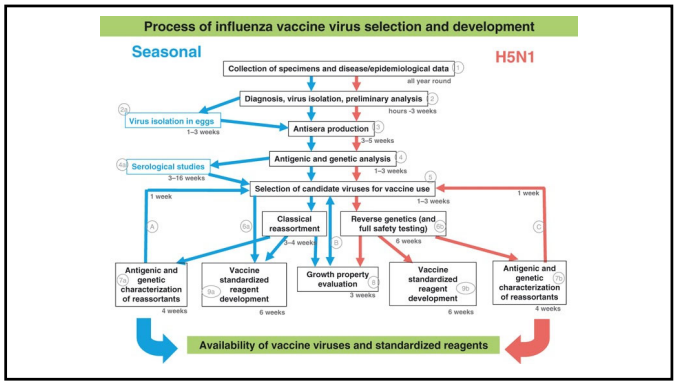

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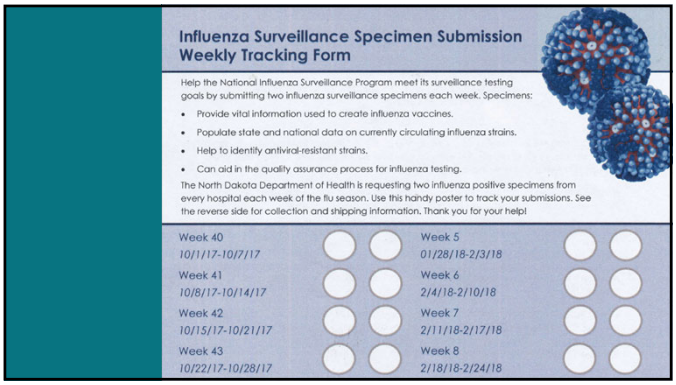

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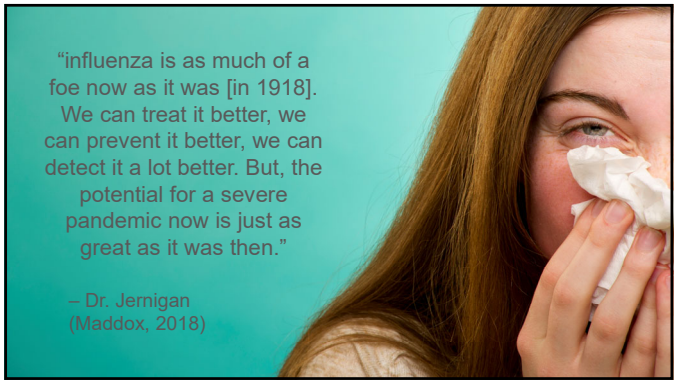

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