

H1N1 Influenza

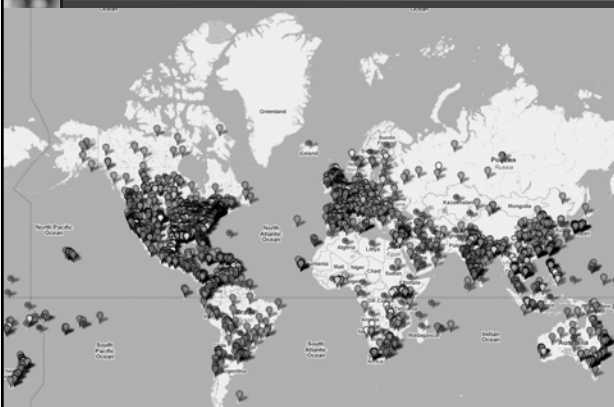


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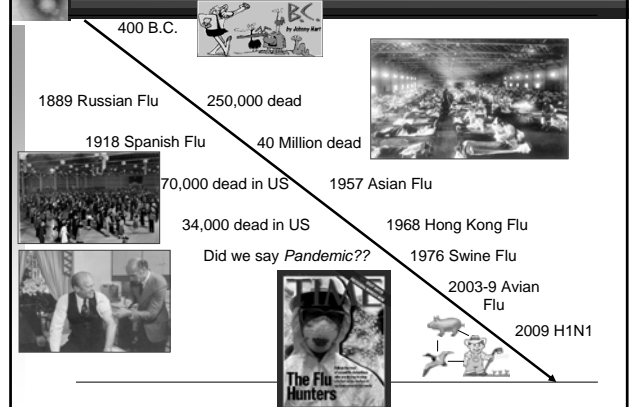
April 1, 2009



April 1 – September 25, 2009



History of Influenza Pandemics



Influenza Basics

❖ **Influenza A:**

Wild birds are natural hosts, but the virus infects mammals too, such as pigs, horses and people.

❖ **Influenza B:**

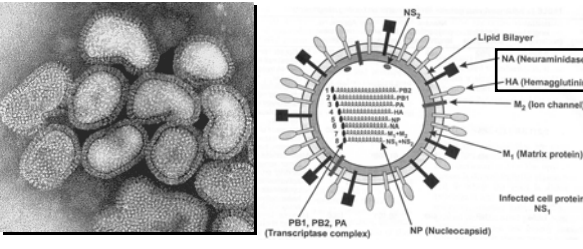
Humans are the natural hosts.

Influenza-A Basics

❖ Subtypes based on viral surface proteins.

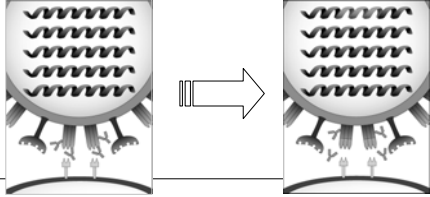
- 16 hemagglutinin (HA) subtypes
- 9 neuraminidase (NA) subtypes
- Subtypes named according to their HA and NA surface proteins
- Only a few subtypes normally circulate in people, other subtypes normally circulate in birds and other species

Flu Virus Structure



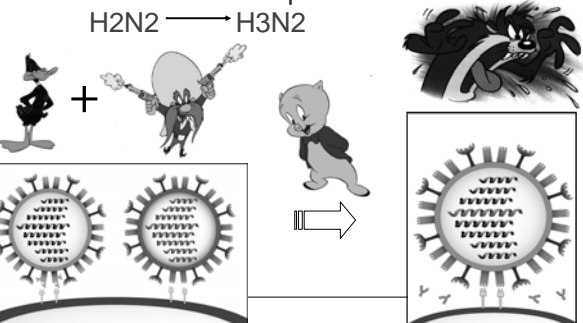
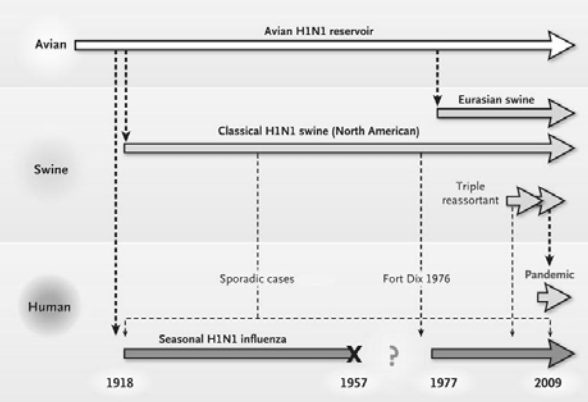
Antigenic Changes - Drift

- Structure of hemagglutinin (H) and neuraminidase (N) periodically change
- Drift** Minor changes, same subtype
Associated with epidemics
A/USSR/77 → A/Brazil/78



Antigenic Changes - Shift


- Major change, new subtype
Associated with pandemics
H2N2 → H3N2

Zimmer and Burke 361 (3): 279, Figure 1 NEJM, July 16, 2009


Novel H1N1 Influenza Virus

- Formerly...
 - Swine flu
 - SOIV (swine origin influenza virus)
 - Now:** Novel H1N1 or 2009 H1N1
- This H1N1 influenza virus, has never before been detected in humans
- Appears to have begun in Mexico in March, 2009. Epidemiologic alert occurred on April 16.
- First detected in the US in San Diego and Imperial counties in April due to routine influenza surveillance



Novel H1N1 Influenza

- Novel H1N1 (referred to as swine flu early on) is a new influenza virus that is spreading from person-to-person
- The United States government initially declared a public health emergency in the U.S. in response to the H1N1 outbreak. Since it was not known how serious this virus could be, Public Health officials initially recommended the most protective steps.

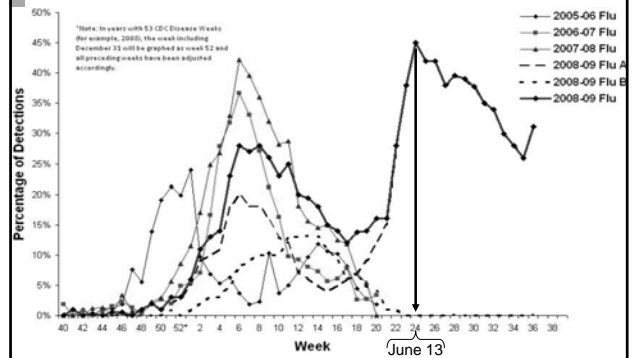


Novel H1N1 Influenza

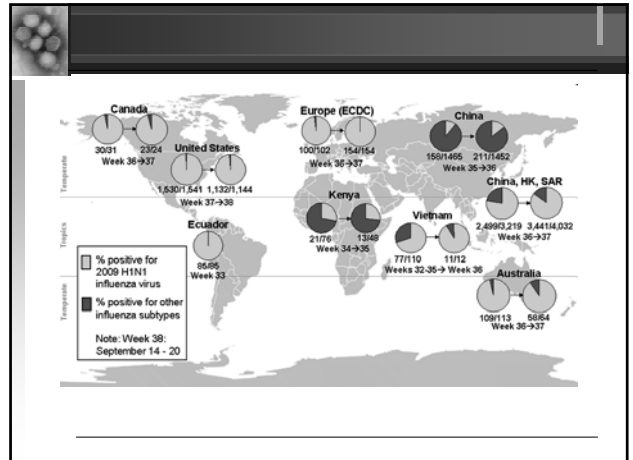
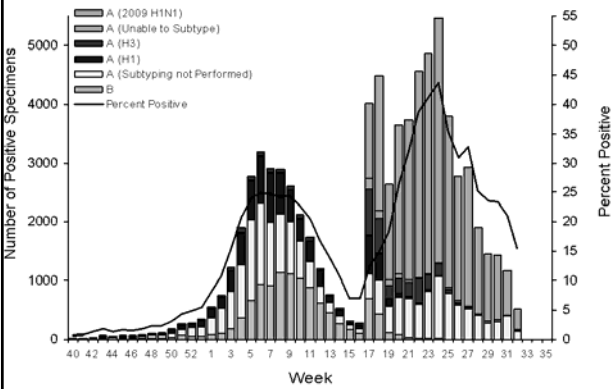
- ❖ Influenza is always serious. Each year in the United States, seasonal influenza results, on average, in:
 - 36,000 deaths
 - More than 200,000 hospitalizations from flu-related causes
- ❖ The outbreak currently appears to be as serious as seasonal flu. Protective recommendations have been scaled back to those used during the regular flu season.
- ❖ Because this is a new virus, most people will not have immunity to it, and illness may be more widespread

California H1N1 as of Sept 16, 2009

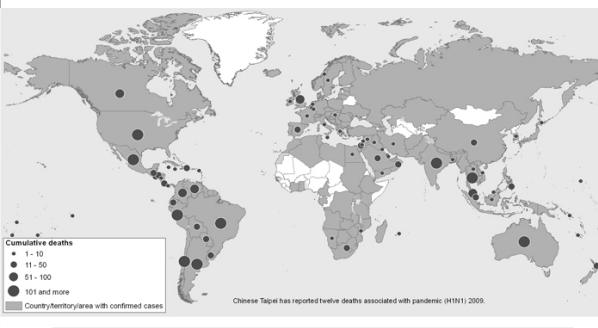
Influenza Detections at Sentinel Laboratories/Respiratory Laboratory Network



Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2008-09



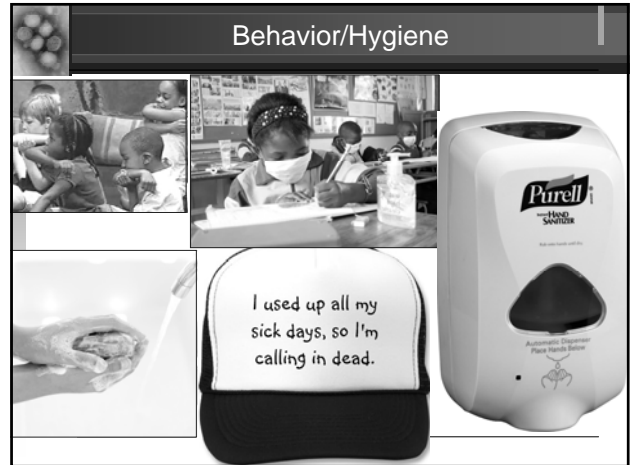
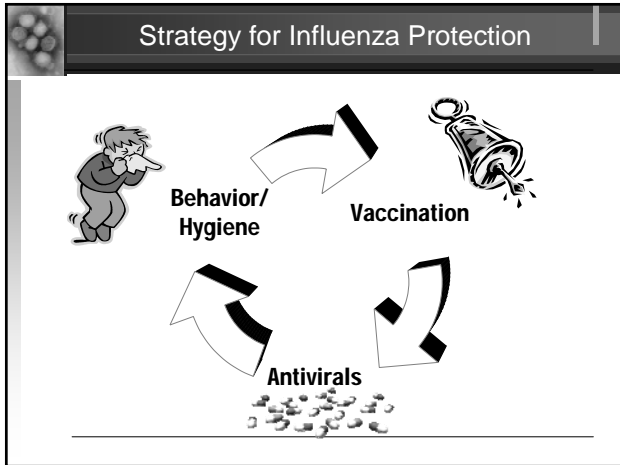
World H1N1 Deaths as of Sept 20, 2009



Situation in the U.S. as of Sept. 25, 2009

- ❖ 46,329 H1N1 cases
 - 60% from 5-24 yrs old
- ❖ 10,082 hospitalizations
 - 20 yrs median age
- ❖ 936 deaths
 - 117 kids
 - Median age: 37 yrs
- ❖ CDC estimates that over one million persons in the US have been ill with the virus since April, 2009





How Does H1N1 Influenza Spread?

- ❖ This virus seems to spread the same way seasonal flu spreads
- ❖ Primarily through respiratory droplets
 - Coughing
 - Sneezing
 - Touching respiratory droplets on yourself, another person, or an object, then touching mucous membranes (e.g., mouth, nose, eyes) without washing hands

You Can't Get H1N1 from Eating Pork!

- ❖ The novel H1N1 influenza virus (formerly referred to as swine flu) virus is not spread by food
- ❖ You cannot get novel H1N1 flu from eating pork or pork products. Eating properly handled and cooked pork products is safe

Signs and Symptoms

Symptoms of novel H1N1 flu in people are similar to seasonal flu

- Fever
- Cough
- Sore throat
- Runny or stuffy nose
- Body aches
- Headache
- Chills
- Fatigue
- In addition, vomiting (25%) and diarrhea (25%) have been reported (a higher rate than for seasonal flu)

Emergency Warning Signs in Adults

Most people should be able to recover at home, but watch for emergency warning signs that mean you should seek immediate medical care

In adults:

- ❖ Difficulty breathing or shortness of breath
- ❖ Pain or pressure in the chest or abdomen
- ❖ Sudden dizziness
- ❖ Confusion
- ❖ Severe or persistent vomiting
- ❖ Flu-like symptoms improve but then return with fever and worse cough

Emergency Warning Signs in Children

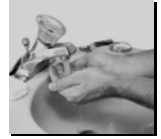
If a child gets sick and experiences any of these warning signs, seek emergency medical care

In children:

- ❖ Fast breathing or trouble breathing
- ❖ Bluish or gray skin color
- ❖ Not drinking enough fluids
- ❖ Severe or persistent vomiting
- ❖ Not waking up or not interacting
- ❖ Irritable – the child does not want to be held
- ❖ Flu-like symptoms improve but then return with fever and worse cough

Everyday Steps That Protect Your Health

- ❖ Wash your hands often with soap and warm water, especially after you cough or sneeze. Wash for 15 – 20 seconds.
- ❖ Alcohol-based hand wipes or gel sanitizers are also effective



Everyday Steps That Protect Your Health

- ❖ Cover your nose and mouth with a tissue when you cough or sneeze. Throw the tissue in the trash after you use it
- ❖ Sneeze in your sleeve
- ❖ Avoid touching your eyes, nose or mouth
- ❖ Avoid contact with sick people.
 - Stay six feet away from people who are coughing if you can



If You Get Sick...

- ❖ Stay home until you've been symptom-free for 24 hours
- ❖ Limit your contact with other people
- ❖ Wearing a mask when you are with other people could prevent the spread of your germs to them



To Mask or Not to Mask...

- ❖ Must be worn correctly to work
- ❖ Must be changed frequently
- ❖ Mostly protects other people from you!
- ❖ N95 most effective



Workplace Solutions

- ❖ Do not use other workers' phones, desks, offices, or other work tools and equipment
- ❖ Keep frequently touched common surfaces clean
 - telephones, computer keyboards, doorknobs, etc
- ❖ Review sick-leave policies
- ❖ Should household members of sick people stay home, too?
 - No, they can go to work 😊



H1N1 Vaccine



H1N1 Vaccine

- ❖ Produced the same as the seasonal vaccine
 - Same companies
 - Same production (still made in eggs)
 - Seasonal vaccine does not protect against H1N1
- ❖ Predicted 190 million doses
 - 45 million in October, 20 million/week there after
 - Target groups first
 - Efficacy and safety trials done at end of Sept
 - Some trials now complete

CDC Target Groups for H1N1 Vaccine

- ❖ Pregnant women
- ❖ Household contacts of infants under 6 months
- ❖ Healthcare and emergency-services workers
- ❖ Young people between 6 months and 24 years of age
- ❖ Adults 25-64 yrs with underlying risk conditions, such as diabetes and chronic lung disease

Flu Vaccine Administration

- ❖ Intramuscular or intranasal
- ❖ 1 dose for those over 9 years
 - 2 doses for 6 mos-9 yrs
- ❖ Can give at same time as season flu vaccine
- ❖ CANNOT get the flu from the flu vaccine!



Flumist Administration

Only for those non-pregnant health 2-49 year olds



Flu Vaccine Delivery

- ❖ Public health will distribute
- ❖ Only certain providers and public will give H1N1 vaccine
- ❖ Vaccine is free of charge, an administration fee may be charged
- ❖ After October/November, vaccine will likely be given to all who request it

Los Angeles Times

Most refuse H1N1 shots
for their kids, poll finds

Antivirals



What Do Antivirals Do?

- ❖ 4 anti-influenza drugs
 - Tamiflu®, Relenza®, Rimantadine, Amantadine
 - Only Tamiflu & Relenza can be used
- ❖ Can treat or prevent influenza infection
- ❖ Must be started within 48 hours to treat effectively
- ❖ Preventative use NOT recommended currently
 - Drugs are in short supply

Who Should Get the Drugs?

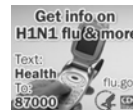
- ❖ Groups at high risk of complications
 - Children younger than 2 years old
 - Persons aged 65 years or older
 - Pregnant women
 - Persons of any age with certain chronic medical or immunosuppressive conditions
 - Hospitalized patients
- ❖ Most do NOT need the medication
- ❖ Adverse Drug Reactions
 - Tamiflu® → nausea and vomiting
 - Relenza® → caution in people breathing problems

Keeping Up and Going Forward

California Department of Public Health
www.cdph.ca.gov

Centers for Disease Control & Prevention (CDC)
<http://www.cdc.gov/h1n1flu/>
<http://www.cdc.gov/h1n1flu/espanol/>
1-800-CDC-INFO (1-800-232-4636)

World Health Organization
<http://www.who.int/csr/disease/swineflu/en/index.html>



The Fall/Winter Flu Season

- ❖ Illness caused by H1N1 becomes more severe or deadly as the season begins
- ❖ Businesses should develop continuity of operations plans in case many people get sick and are unable to come to work
- ❖ Public Health planning:
 - Distribution of medication and vaccines
 - Surveillance of school absences, viral testing and hospitalizations and deaths due to flu and pneumonia
 - Communication and education for the public

Questions?

"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... must turn with its whole might to combating the greatest enemy of all-infectious disease" (12/28/1918).

American Medical Association final edition of 1918