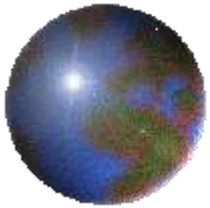

Pandemic H1N1 2009:
The Public Health Perspective

Massachusetts Department of Public Health
November, 2009

Training Objectives

- Describe and distinguish between seasonal and pandemic influenza.
- Provide a brief history of flu pandemics.
- Describe what is known about pandemic H1N1 2009 flu (swine flu) at the current time.
- Provide guidelines for care, treatment, infection control, and prevention of pandemic H1N1 in clinical and community settings.

What is seasonal influenza?

- Human respiratory infection caused by Influenza Type A or Type B
- Spread by contact with respiratory secretions from an infected person (coughing, sneezing, talking)
- Incubation period: 1 to 5 days from exposure to onset of symptoms (average of 2 days)
- Contagious period:
  - Maximum at onset of symptoms,
  - Infectious 1-2 days before symptoms to 4-5 days after symptom onset
- In New England, seasonal flu usually begins in Dec and peaks in Jan or Feb.

Symptoms of Seasonal Flu

- Sudden onset of fever (usually high)
- Headache
- Extreme tiredness
- Dry cough
- Sore throat
- Runny or stuffy nose
- Muscle aches
- Nausea, vomiting, and diarrhea can also occur but are more common in children than adults.

Colds vs. the Flu

Important Differences Between Colds and the Flu	
WITH A COLD:	**WITH THE FLU:**
You almost never have a fever.	You have a fever.
You feel stuffiness in your head.	Your entire body feels sick.
You feel a little sick.	You feel very sick.
You can have a cold any time of year.	Seasonal flu starts in early winter and continuing through early spring. Flu pandemics happen every 30 years or so, and don't have a particular season.
There is no shot to protect you.	You can get a shot to protect yourself.
There are no prescription medicines to treat colds.	There are prescription medicines to treat the flu.

Impact of Seasonal Influenza

- 36,000 deaths annually in U.S.
  - Est. > 800 MA residents die from complications of influenza
- 200,000 or more hospitalizations in U.S.
  - Est. > 2,600 excess hospitalizations in MA

At High Risk for Complications from Seasonal Flu

- Children < 5 yrs of age
- Persons ≥ 65 yrs of age
- Persons with the following conditions:
  - Chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, hematological (including sickle cell disease), neurologic, neuromuscular, or metabolic disorders (including diabetes mellitus)
  - Immunosuppression, inc. that caused by medications or by HIV
  - Pregnant women
  - Persons < 19 yrs who are receiving long-term aspirin therapy
  - Residents of nursing homes and other chronic-care facilities

- See: http://www.cdc.gov/h1n1flu/recommendations.htm

Influenza Virus Type A

- Associated with annual epidemics *and* pandemics
- Causes moderate to severe illness
- Affects all age groups
- Infects humans and other species, such as pigs and birds

Influenza Type A Subtypes

- Influenza Type A infects many species.
- All known influenza A subtypes infect birds.
- Subtypes are designated by the hemagglutinin (H) and neuraminadase (N) proteins on the surface of the virus.
- To date, only H1, H2, and H3 subtypes have been **efficiently** transmitted from person to person.

Flu virus is constantly changing

- **Drift:** Minor change due to constant mutation
  - Reason why seasonal flu vaccine must be updated each year
- **Shift:** Major change with new virus causing human infection
  - Mutation
  - Reassortment
  - Pandemic potential ~ Shift happens!

What is a pandemic?

- An epidemic occurring worldwide, or over a very wide area,
  - crosses international boundaries, and
  - usually affects a large number of people
  - Ex: plague, smallpox, polio, influenza
- An influenza pandemic is caused by a new strain of the influenza Type A virus.
  - *Because the virus is new, virtually no one is immune - all exposed could get sick.*

Influenza Pandemic Prerequisites

1. A new influenza virus subtype emerges;
2. It infects humans, causing serious illness; and
3. It spreads easily and sustainably among humans.

Influenza Pandemic Characteristics

- Spread rapidly throughout the world
- Result in an unusually high number of cases and deaths
- Last 1 - 2 years; may have a second wave
- Occur in ~ 10-40 year intervals

1918 influenza pandemic

Most deadly outbreak of infectious disease ever

- 20 - 40 million or more died worldwide, 500,000 in U.S.
- 20% - 40% of population sick
- Quick to kill, especially healthy young adults

1957 and 1968 influenza pandemics

- 1957 Asian Flu (H2N2)
  - 70,000 Americans died
- 1968 Hong Kong Flu (H3N2)
  - 34,000 Americans died

Pandemic H1N1 2009 ~ Description

- Novel virus not previously detected in pigs or humans
- Contains genetic elements of avian, swine, and human viruses
- CDC estimates > million cases of novel H1N1 in the U.S between April and June 2009.
- Most ill people have recovered.
- CDC estimates a pandemic severity index of 2 (similar to the 1957 flu pandemic).

Confirmed Cases of H1N1 in Massachusetts (November 12,2009)

- 1,659 confirmed cases
- No. of hospitalized: 235
- No. of deaths: 15
- Median age of cases: 14 years
- School-aged individuals (5-18 years) have been most affected with 62% of cases age 18 or younger

Pandemic H1N1 2009 Timeline

3-18-09	Mexico reports cases of influenza-like illness (ILI)
4-13-09	First "swine flu" death in Mexico
4-15-09	Confirmation of 1st U.S case (from CA)
4-27-09	Canada and Spain report cases; WHO raises pandemic alert level to 4
4-29-09	WHO raises pandemic alert level to 5
5-12-09	CDC reports severe cases in pregnant women
5-20-09	Worldwide cases surpass 10,000
6-11-09	WHO declares pandemic level 6

Symptoms of Pandemic H1N1 2009

- Symptoms are similar to seasonal flu.
- Most common symptoms:
  - fever (100.4° F)
  - cough
  - sore throat
  - Headache, body aches
  - chills
  - fatigue
- Diarrhea, vomiting and shortness of breath reported more frequently than with seasonal flu

Transmission of Pandemic H1N1 Flu

- Transmission through respiratory droplets (cough, sneeze) and by indirect contact (touching doorknobs, shaking hands, etc)
- Infectious period - 1 day before symptoms, to 5 -7 days after symptoms begin
- Children and immuno-compromised people may shed the virus for a longer period.

Treatment for Pandemic H1N1 2009

- Two antiviral drugs recommended for treatment or prophylaxis of high risk contacts:
  - Oseltamivir (Tamiflu®)
  - Zanamivir (Relenza®)
- Focused on suspect or confirmed cases:
  - hospitalized, or
  - higher risk for complications of influenza
- Works best within 48 hours of symptom onset.
- Limited resistance to Tamiflu (Denmark, Japan, Hong Kong, Canada, and U.S.)

Vaccines for Pandemic H1N1 2009

- Pandemic H1N1 vaccine is undergoing clinical trials.
- Pandemic H1N1 vaccine does not replace seasonal vaccine.
- Vaccine priority groups are based on epidemiological data from spring 2009.
- Children younger than 10 years will require 2 doses.

Vaccine Safety

- H1N1 vaccine in U.S. will be made by 5 manufacturers licensed by the FDA.
- H1N1 vaccine is made and tested the same way as seasonal flu vaccine.
- Flu vaccine is safe for most people.
- Safety of H1N1 vaccine will be carefully watched.

Monitoring Vaccine safety

- Vaccine Adverse Event Reporting System
  - (VAERS) http://vaers.hhs.gov/
- Active Surveillance
  - MCOs representing 3% of the U.S. pop.
  - Vaccine Safety Datalink (VSD)

Flu Mist Vaccine

- Active immunization for individuals 2-49 years of age
- Does not contain thimerosal
- Should not be given to-
  - Pregnant women
  - Children younger than 24 months
  - Individuals with history of hypersensitivity to eggs

Flu Mist Vaccine

- Should not be given to-
  - Children and adolescents receiving aspirin
  - Anyone with a weakened immune system
  - Anyone with-
    - heart disease
    - kidney or liver disease
    - lung disease
    - diabetes
    - asthma
    - children younger than 5 years with asthma

Pregnant Women and Pandemic H1N1

- Severe illnesses among pregnant women and infants have been reported in this outbreak.
- Pregnant women with influenza-like illness (ILI) should be treated as soon as possible.
- Fever in pregnant women may pose a risk to fetus; acetaminophen is best option.
- Antivirals are not a contraindication for breastfeeding.

CDC: http://www.cdc.gov/h1n1flu/clinician_pregnant.htm

Priority Groups for Pandemic H1N1 Vaccine

- All pregnant women
- All people 6 months through 24 years of age
- People who live with or care for children younger than 6 months of age
- Healthcare and emergency services personnel, and
- People aged 25 through 64 years who have health conditions associated with higher risk of medical complications from influenza
- http://www.cdc.gov/h1n1flu/recommendations.htm

Non-Pharmaceutical Interventions (NPIs)

Measures used in addition to vaccines and antiviral drugs to mitigate the impact of a pandemic

- Isolation of ill people
- Quarantine of contacts
- Social distancing measures:
  - School closure (dismissal), if pandemic is severe
  - Adapted work schedules
  - Cancellation of public gatherings
- Hand hygiene, respiratory etiquette, and PPE

Using Masks for Pandemic H1N1

- Not recommended in community settings where exposure to pandemic H1N1 is unlikely
- Ill persons should wear masks when in contact with others, e.g. breastfeeding a baby
- Well persons should wear masks when close contact with a sick person is unavoidable, e.g. caregivers at home

“Flu?

If we but knew

The cause of flu

And whence it came and what to do,

I think that you

And we folks, too,

Would hardly get in such a stew.

Do you?”

Illinois Health news, vol. 9, November 1918

Flu Care at Home Materials

See Flu Care at Home booklet for more information.

Flu Care at Home

- Uncomplicated cases of H1N1 Flu can be cared for at home:
  - Stay hydrated: water, broth, sports drinks in moderation, non-caffeinated beverages
  - Get plenty of rest
  - Eat well
  - Avoid close contact with others until symptoms resolve
  - Check with health care provider about special care and medications.

H1N1 Flu Prevention and Control

- Get a seasonal flu shot every year!
- Get the H1N1 flu shot this year!
- Wash your hands; use hand sanitizer!
- Practice cough etiquette (cover your mouth and nose; discard used tissues)
- Avoid touching your eyes, nose, or mouth.
- Stay 3-6 feet away from people who are coughing and sneezing.

Pneumococcal Disease and Vaccination

- Common complication of influenza
- Increasingly antibiotic-resistant
- Unable to conduct pneumococcal vaccine campaigns during pandemic
- Recommendations for adults were expanded in 2009 schedule.

Vaccinating everyone at risk for pneumococcal disease protects them now, and during the pandemic!

MDPH Pandemic H1N1 Website for

- General Public
- Parents
- Schools and Colleges
- Providers
- Special risk groups
- Businesses

Resources for Pandemic Flu

- Mass 211: http://www.mass211.org/emergencyinfo.html
- Massachusetts Department of Public Health: http://www.mass.gov/dph/swineflu
- Centers for Disease Control and Prevention: http://www.cdc.gov/h1n1flu/
- U.S. Department of Health & Human Services: http://www.flu.gov/
- World Health Organization: http://www.who.int/csr/disease/swineflu/en/index.html