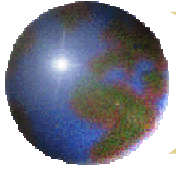


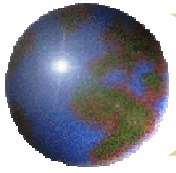
# *Pandemic H1N1 2009: The Public Health Perspective*

Massachusetts Department of Public Health  
November, 2009



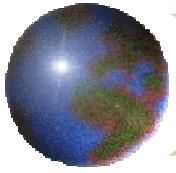
## *Training Objectives*

- ✚ 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.



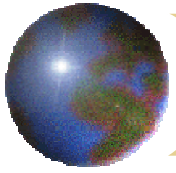
## *What is seasonal influenza?*

- 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.



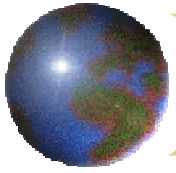
## *Symptoms of Seasonal Flu*

- ✚ 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.



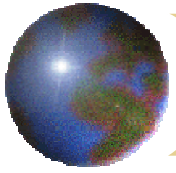
## *Colds vs. the Flu*

<b>Important Differences Between Colds and the Flu</b>	
<b>WITH A COLD:</b>	<b>WITH THE FLU:</b>
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.



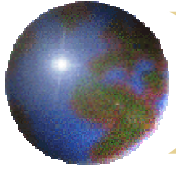
## *Impact of Seasonal Influenza*

- 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



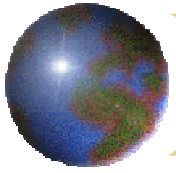
## *At High Risk for Complications from Seasonal Flu*

- Children < 5 yrs of age
- Persons  $\geq$  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>



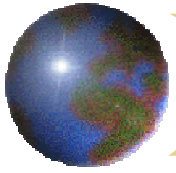
## *Influenza Virus Type A*

- 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*

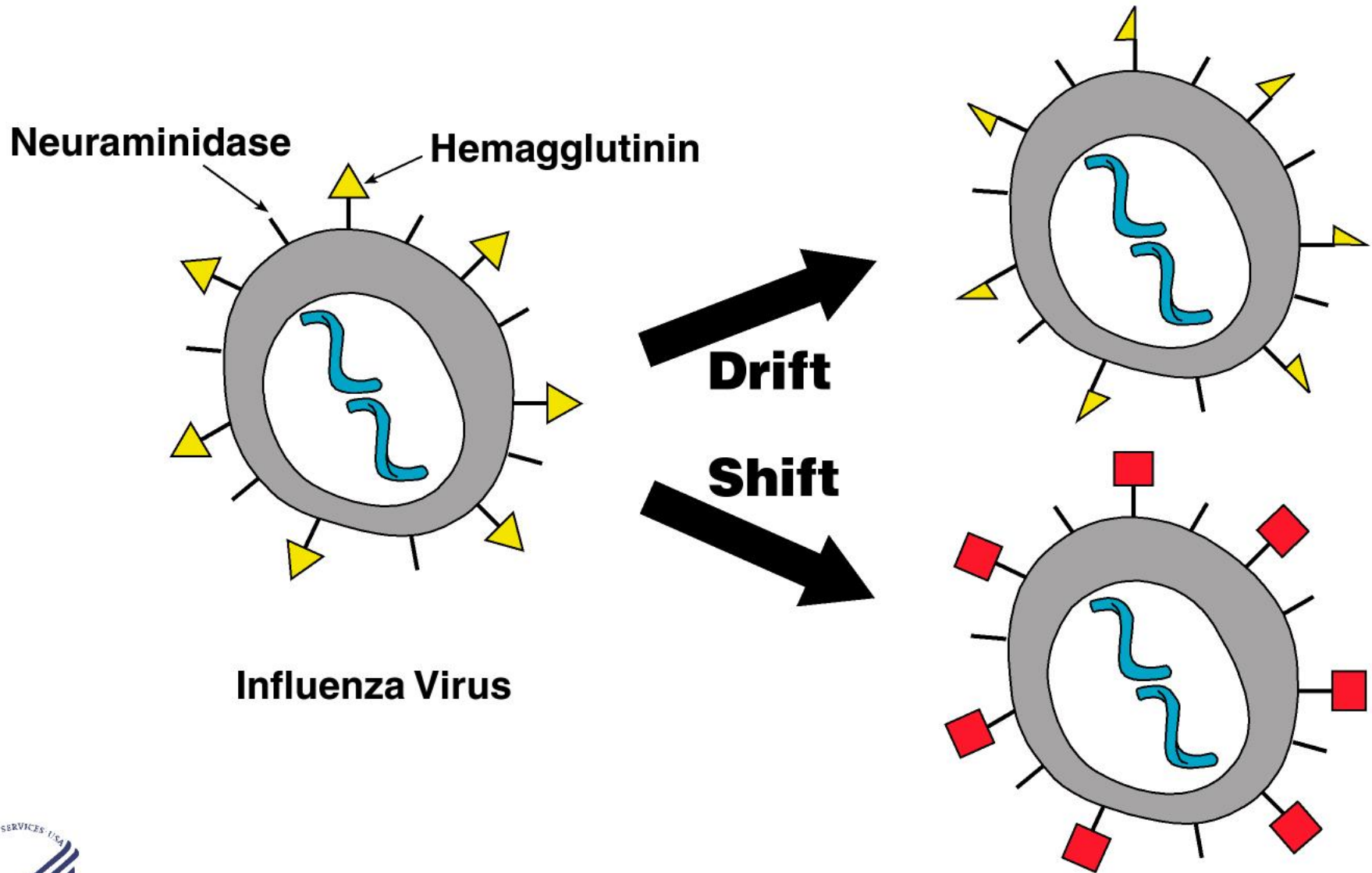
- ❖ Influenza Type A infects many species.
- ❖ All known influenza A subtypes infect birds.
- ❖ Subtypes are designated by the hemagglutinin (H) and neuraminidase (N) proteins on the surface of the virus.
- ❖ To date, only H1, H2, and H3 subtypes have been **efficiently** transmitted from person to person.

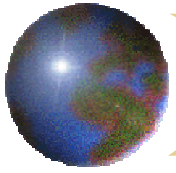


## *Flu virus is constantly changing*

- **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!

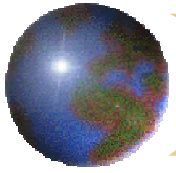
# Influenza: Antigenic Drift and Shift





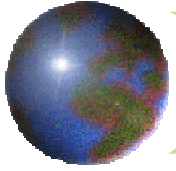
## *What is a pandemic?*

- ❖ 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.*



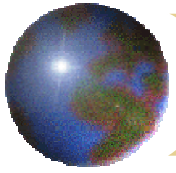
## *Influenza Pandemic Prerequisites*

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

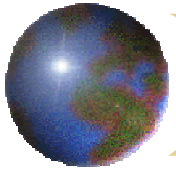


## *1918 influenza pandemic*



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



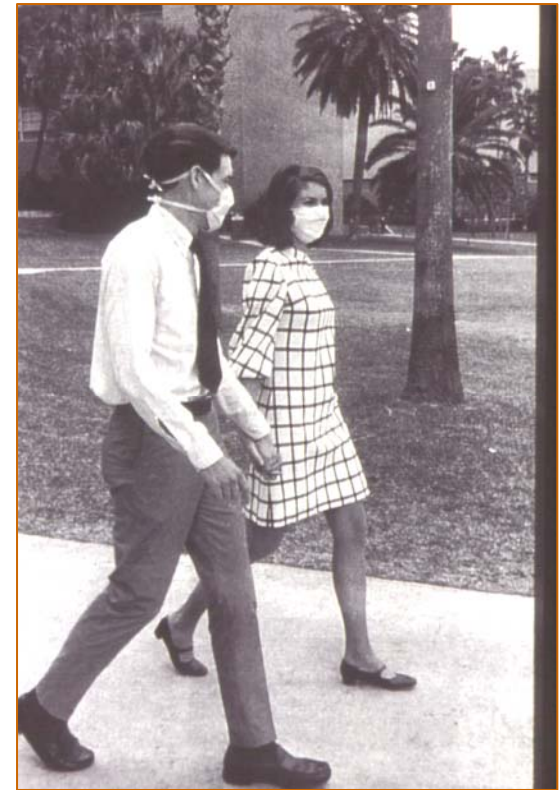
# *1957 and 1968 influenza pandemics*

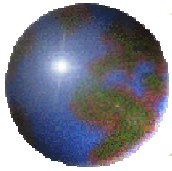
- 1957 Asian Flu (H2N2)

  - 70,000 Americans died

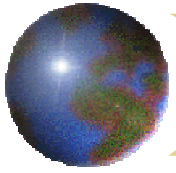
- 1968 Hong Kong Flu (H3N2)

  - 34,000 Americans died



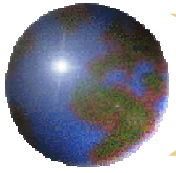


*Is this the “Swine Flu” Culprit?*



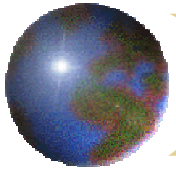
## *Pandemic H1N1 2009 ~ Description*

- ✚ 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).



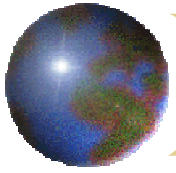
## *Confirmed Cases of H1N1 in Massachusetts (November 12, 2009)*

- ✿ 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

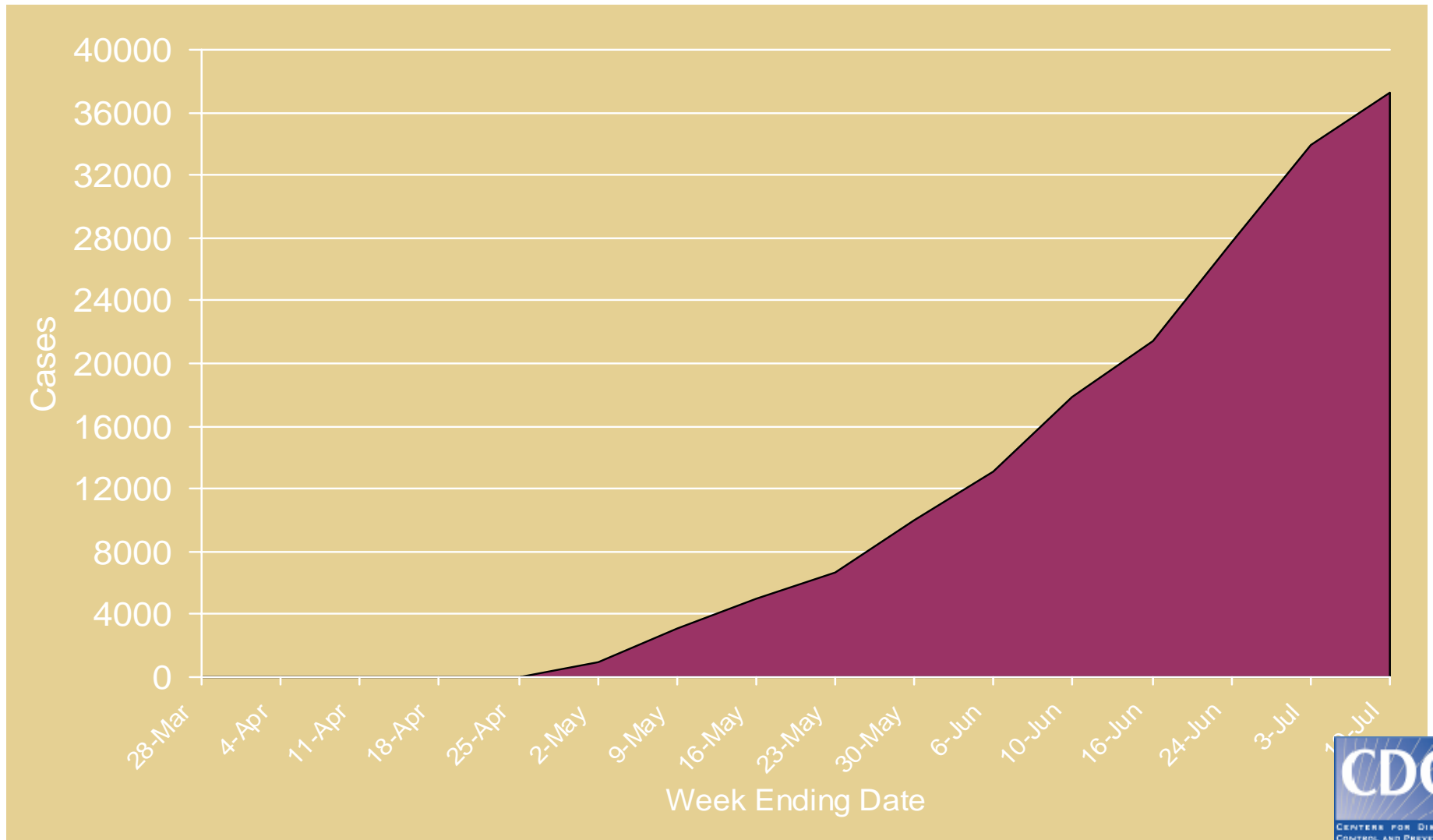


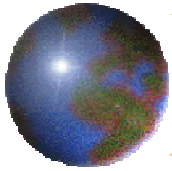
## *Pandemic H1N1 2009 Timeline*

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 1 <sup>st</sup> 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

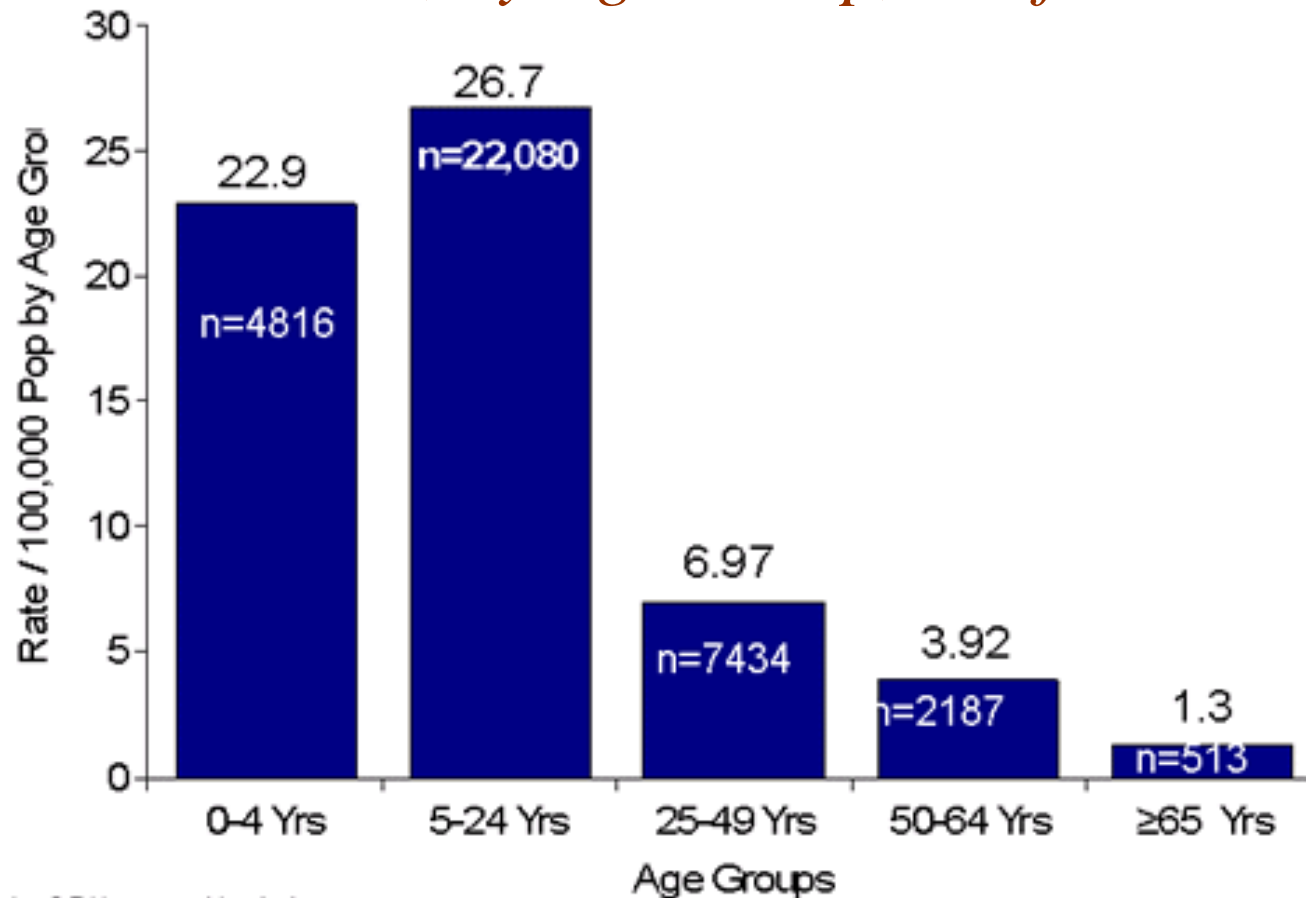


*Confirmed and Probable Novel H1N1 Cases in U.S. as of June 10, 2009 (N=37,246)*



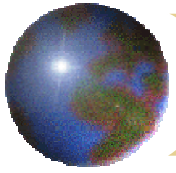


## *Novel H1N1 Confirmed and Probable Case Rate in the United States, by Age Group, as of 7-24-09*



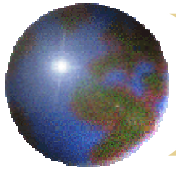
\*Excludes 6,741 cases with missing ages.

Rate / 100,000 by Single Year Age Groups: Denominator source: 2008 Census Estimates, U.S. Census Bureau at:  
<http://www.census.gov/popest/national/asrh/files/NC-EST2007-ALLDATA-R-File24.csv>



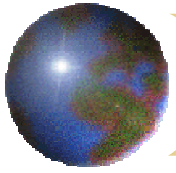
# *Symptoms of Pandemic H1N1 2009*

- ❖ 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



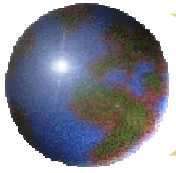
## *Transmission of Pandemic H1N1 Flu*

- ✦ 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.



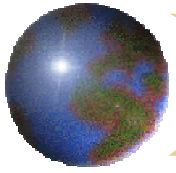
## *Treatment for Pandemic H1N1 2009*

- 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.)



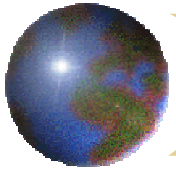
## *Vaccines for Pandemic H1N1 2009*

- 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.



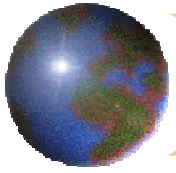
## *Vaccine Safety*

- 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.



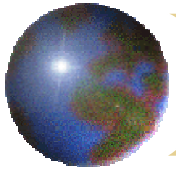
## *Monitoring Vaccine safety*

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



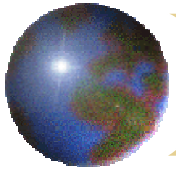
## *Flu Mist Vaccine*

- 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*

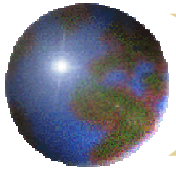
- Should not be given to-
  - Children and adolescents receiving aspirin
  - Anyone with a weakened immune system
  - Anyone with-
    - heart disease
    - kidney or liver disease
    - lung disease
    - diabetes
    - asthma
    - children younger than 5 years with asthma



## *Pregnant Women and Pandemic H1N1*

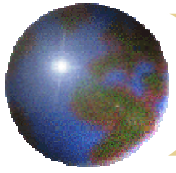
- ❖ Severe illnesses among pregnant women and infants have been reported in this outbreak.
- ❖ Pregnant women with influenza-like illness (ILI) should be treated as soon as possible.
- ❖ Fever in pregnant women may pose a risk to fetus; acetaminophen is best option.
- ❖ Antivirals are not a contraindication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

CDC: [http://www.cdc.gov/h1n1flu/clinician\\_pregnant.htm](http://www.cdc.gov/h1n1flu/clinician_pregnant.htm)



## *Priority Groups for Pandemic H1N1 Vaccine*

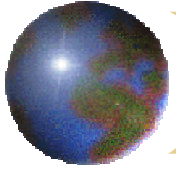
- All pregnant women
- All people 6 months through 24 years of age
- People who live with or care for children younger than 6 months of age
- Healthcare and emergency services personnel, and
- People aged 25 through 64 years who have health conditions associated with higher risk of medical complications 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

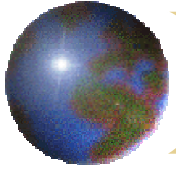
- ⊕ Isolation of ill people
- ⊕ Quarantine of contacts
- ⊕ Social distancing measures:
  - ⊞ School closure (dismissal), if pandemic is severe
  - ⊞ Adapted work schedules
  - ⊞ Cancellation of public gatherings
- ⊕ Hand hygiene, respiratory etiquette, and PPE



# *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

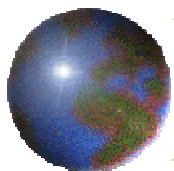




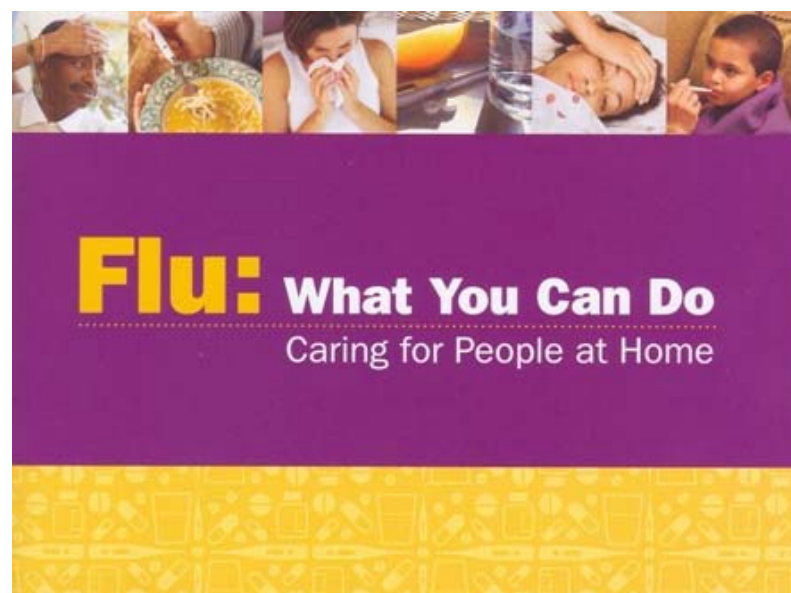
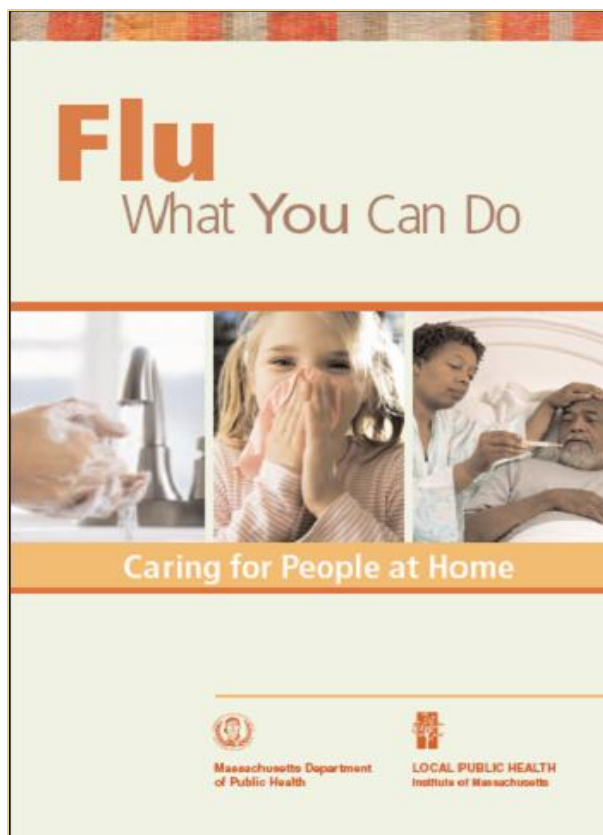
## “Flu?”

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?”

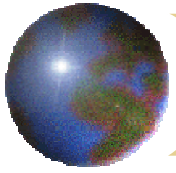
**Illinois Health news, vol. 9,  
November 1918**



# *Flu Care at Home Materials*

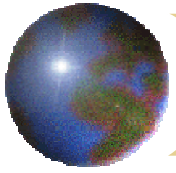


See Flu Care at Home booklet for more information.



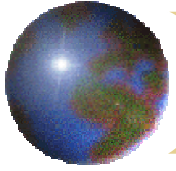
## *Flu Care at Home*

- ❖ 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*

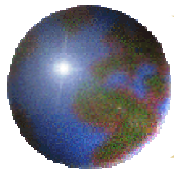
- ✚ Get a seasonal flu shot every year!
- ✚ Get the H1N1 flu shot this year!
- ✚ Wash your hands; use hand sanitizer!
- ✚ Practice cough etiquette (cover your mouth and nose; discard used tissues)
- ✚ Avoid touching your eyes, nose, or mouth.
- ✚ Stay 3-6 feet away from people who are coughing and sneezing.



## *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

The Official Website of the Office of Health and Human Services (EOHHS)

## Health and Human Services

Mass.gov Home | State Agencies | State Online Services

EOHHS Home | For Consumers | For Providers | For Researchers | For Government

Home > Provider > Guidelines and Resources > Guidelines for Services & Planning > Diseases and Conditions > Influenza > Swine Flu

**Friendly URL for this page:** <http://www.mass.gov/dph/swinflu>

For the most updated information on swine flu in MA, visit our blog at <http://publichealth.blog.state.ma.us>. You can also visit the [DPH home page](#).

**Message from the Commissioner**

- [Letter from Commissioner Auerbach 4/27/09 \(PDF\) | RTE](#)

**Updated Case Count**

[View the Case Count \(PDF\) | RTE](#)

**Cúm Điều Quý Vị Có Thể Làm**

**Chăm Sóc Người Nhà**

Massachusetts Department of Health | LOCAL PUBLIC HEALTH | Office of Massachusetts

The Commonwealth of Massachusetts  
Executive Office of Health and Human Services  
Department of Public Health  
250 Washington Street, Boston, MA 02108-4619

**INTERIM GUIDANCE ON TESTING AND ANTIVIRAL TREATMENT FOR INFLUENZA H1N1**

Updated: May 7, 2009, 4:00 pm

**What's New:** This update is intended to clarify guidance on testing and antiviral treatment for the novel influenza A (H1N1), and to limit the use of these measures to those situations where they are most likely to be beneficial. Steps for specimen collection have also been simplified, on page 2 of this document.

Massachusetts Department of Public Health (MDPH) has been in ongoing contact with the CDC over the past week and over the weekend. Given the relatively mild course the disease has demonstrated thus far, MDPH has concluded that prior testing and treatment recommendations should be modified. CDC new recommendations that testing and treatment be focused on those with severe respiratory illness and those at highest risk of complications from influenza. We hope that these revised guidelines will ease the pressure for antiviral medications and reduce patient expectations for treatment. We appreciate your commitment to excellent clinical care and the thoughtful feedback on the challenges you have faced in implementing recommendations over the past week. Thank you for your patience as we continue to rapidly evolving evidence base related to severe influenza A (H1N1).

Individuals with mild illness should be advised to stay at home. They do NOT need to be tested or treated unless they meet one of the high-risk criteria listed below.

**WARNING:** Do not perform rapid diagnostic tests routinely on all individuals with mild illness. Collection of clinical specimens in high-risk patients to be submitted to MDPH's William A. Aronson State Laboratory Institute (WSLI) should be restricted to that listed in only one of the following individuals:

- Those with flu-like respiratory illness or sepsis-like syndrome requiring hospitalization
- Those at high risk of complications with influenza, including:
  - Children less than 2 years old
  - Persons aged 65 years or older
  - Adults and children with immune suppression (including immunosuppression caused by medications or HIV)

Home > Consumer > Prevention and Wellness > Health Promotion > DPH Podcast >

### DPH Health Note Podcast

Welcome to The DPH Health Note: a show featuring public health topics important to the health of our communities and our Commonwealth. This podcast is brought to you by the Massachusetts Department of Public Health.

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**05.05.2009 - H1N1 (Swine Flu) Updated**

This podcast contains information on H1N1 influenza and how to protect yourself from getting ill. This episode of the DPH Health Note runs for approximately 5 minutes.

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**02.23.2009 - Norovirus**

This podcast contains information on Norovirus and steps you can take to protect yourself from getting infected. Norovirus is a term given to a group of viruses that cause gastrointestinal illness in people when they are infected. This episode of the DPH Health Note runs for approximately 4 minutes.

**Specimen Collection Instructions:**

**Nasopharyngeal (NP) Swab Collection:**

1. Assemble all supplies including the virus isolation kit, gloves, pen, scissors, etc.
2. If the VTM is frozen, allow it to thaw completely – usually takes a 2-3 minutes when held in your hands.
3. Tilt the patient's head back slightly. Bend the flexible wire of the sterile NP swab in a small arc and gently insert the swab along the medial part of the septum, until it reaches the posterior nares.
4. Rotate the swab slightly several times to dislodge the columnar epithelial cells and then quickly remove the swab.
5. Insert the NP swab into the cold VTM, cutting the excess wire to fit inside the tube. Firmly secure the cap.

...ion.  
...es, such as the virus isolation kit, gloves, pen, etc.  
...n, allow it to thaw completely – usually takes a 2-3 minutes when held in your hands.  
...ylene-tipped swab with a plastic shaft, vigorously swab only the posterior pharyngeal wall  
...e, wooden shaft swab as a replacement.  
...the cold VTM, and break off the shaft so that it does not protrude above the rim of the container. Firmly secure the cap.  
...the inner aluminum container (provided) and cap. Seal the Specimen Submission Form in a plastic bag and place along with  
...ainer(s) in the outer fiberboard cylinder or box (provided) containing the frozen ice pack. Place the specimen in the  
...

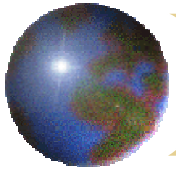
**Protect Yourself from the Flu**

Flu is something to take seriously. But whether you're worried about seasonal flu, bird flu or a flu pandemic (a world-wide outbreak), there are some simple things you can do to protect yourself and your family.

**FLU FACTS**  
What you need to know

[www.mass.gov/dph/flu](http://www.mass.gov/dph/flu)

Brought to you by the Massachusetts Department of Public Health and your local Board of Health.



## *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>