

NASA Update Novel Influenza A (H1N1)

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Background

- 2009 Flu Pandemic: Novel strain of influenza A virus subtype H1N1
- Moderate severity in developed nations/greater severity in developing nations
- Overall case fatality rate 0.4% (0.3%-1.8%)
- Seasonal case fatality rate estimate 0.05%
- Annual influenza epidemics affect 5-15% of population
 - 250,000 – 500,000 deaths worldwide
- 1918 Flu Pandemic 600,000 U.S. fatalities
 - Mild (herald) cases in spring
 - 20 – 100 million deaths worldwide (CFR > than 2.5%)

History

- 03/18/2009 First case reported in Mexico City
- 04/15/2009 CDC confirmation in U.S.
- 04/22/2009 CDC activates EOC
- 04/26/2009 U.S. declares health emergency
 - Implements Pandemic Response Plan
 - WHO raises alert to Phase 5
 - Phase 5 – Pandemic imminent

History

- 06/03/2009 All states, DC, and PR report cases
- 06/11/2009 Pandemic declared – Phase 6
 - Phase 6 reflects geographic spread not severity
- 07/24/2009 CDC discontinues individual case reporting
- 07/31/2009 WHO Update: 162,380 cases/1154 deaths
- 06/22/2009 U.S. Update: 21449 cases/87 deaths
- 07/31/2009 U.S. Update: 5514 hospitalizations/353 deaths
- 08/07/2009 U.S. Update: 6506 hospitalizations/436 deaths

Response

- Panic:
 - News Reports
 - School Closings
 - Travel
 - PPE scarce
 - Tamiflu hoarding
- Controlled U.S. government response:
 - Briefings
 - Telecons
 - E-mails
- WHO Assembly – concern over economy
- Data reporting and accuracy
- Actions concerning pigs

Virus Transmission

- Transmission of novel influenza A (H1N1) is being studied as part of the ongoing outbreak investigation, but limited data available indicate that this virus is transmitted in ways similar to other influenza viruses. Seasonal human influenza viruses are thought to spread from person to person primarily through large-particle respiratory droplet transmission (e.g., when an infected person coughs or sneezes near a susceptible person). Transmission via large-particle droplets requires close contact between source and recipient persons because droplets do not remain suspended in the air and generally travel only a short distance (< 6 feet). Contact with contaminated surfaces is another possible source of transmission. Because data on the transmission of novel H1N1 viruses are limited, the potential for ocular, conjunctival, or gastrointestinal infection is unknown. Since this is a novel influenza A virus in humans, transmission from infected persons to close contacts might be common. All respiratory secretions and bodily fluids (diarrheal stool) of novel influenza A (H1N1) cases should be considered potentially infectious.

Signs and Symptoms

- Fever (93%)
- Cough (83%)
- Shortness of Breath (54%)
- Fatigue/Weakness (40%)
- Chills (37%)
- Myalgias (36%)
- Rhinorrhea (36%)
- Sore Throat (31%)
- Headache (31%)
- Vomiting (29%)
- Diarrhea (24%)

*CDC Aug 4, 2009

Worldwide most patients with Novel H1N1 infection experience mild symptoms and fully recover within 1 week.

Danger signs for severe progression:

1. Extreme SOB/difficulty breathing
2. Cyanosis
3. Bloody sputum
4. Chest pain
5. Altered mental state
6. High fever for more than 3 days
7. Low blood pressure

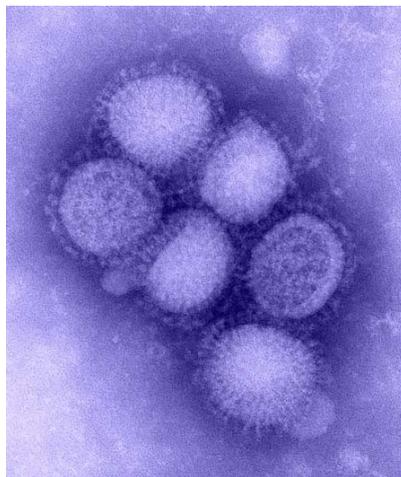
In Children:

1. Fast or difficult breathing
2. Decreased alertness
3. Difficulty waking up
4. Little or no desire to play

Prevention

- Containment and quarantine
- School closures
- Workplace/telecommute
- Hygiene
- PPE
- Chemo prophylaxis
 - Stockpile deployment
 - Vaccine

H1N1 Image from the CDC Influenza Laboratory



The following case definitions are for the purpose of public health investigations of suspected, probable, and confirmed cases of swine-origin influenza A (H1N1) virus infection.

- **Influenza-like-illness (ILI):**

Influenza-like-illness (ILI) is defined as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat in the absence of a KNOWN cause other than influenza.

- **Confirmed Case of Novel Influenza A (H1N1) virus infection:**

A confirmed case of novel influenza A (H1N1) virus infection is defined as a person with an influenza-like illness with laboratory confirmed novel influenza A (H1N1) virus infection by one or more of the following tests:

1. real-time RT-PCR.
2. viral culture.

- **Probable Case of Novel Influenza A (H1N1) virus infection:**

A probable case of novel influenza A (H1N1) virus infection is defined as a person with an influenza-like-illness who is positive for influenza A, but negative for human H1 and H3 by influenza RT_PCR.

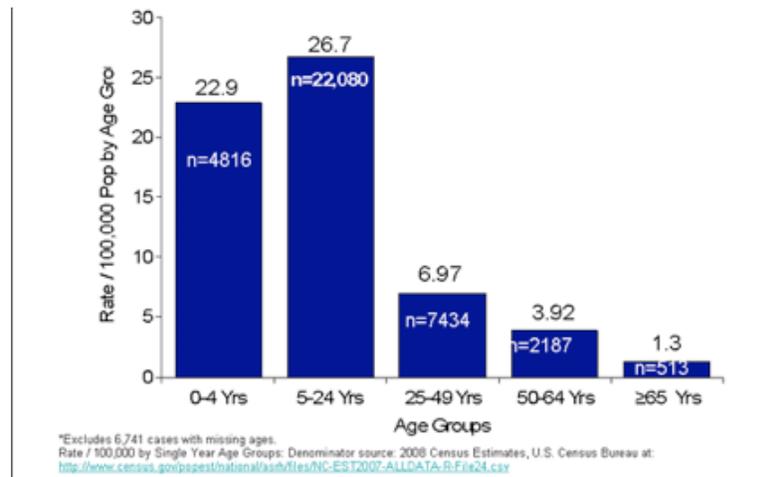
Case Definitions (cont.)

- **Suspected Case of Novel Influenza A (H1N1) virus**

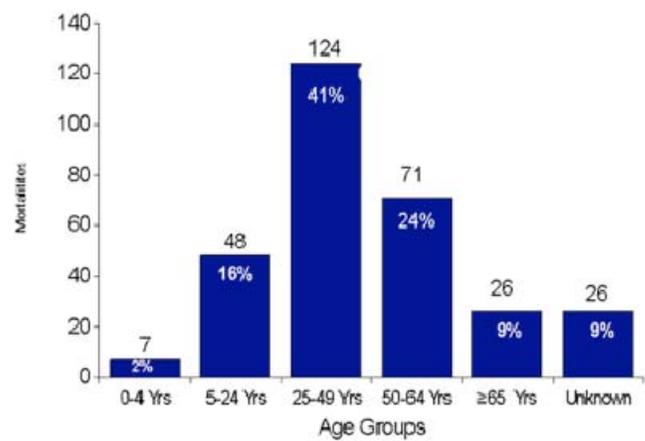
A suspected case of novel influenza A (H1N1) virus infection is defined as a person who does not meet the confirmed or probable case definition, and is not novel H1N1 test negative, and is/has:

1. a previously healthy person < 65 years hospitalized for ILI,
- OR
2. ILI and resides in a state without confirmed cases, but has traveled to a state or country where there are one or more confirmed or probable cases,
- OR
3. ILI and has an epidemiologic link in the past 7 days to a confirmed case or probable case.

Novel H1N1 Confirmed and Probable Case Rate U.S. By Age



Novel H1N1 U.S. Deaths By Age Group



ACIP recommendations 7/29/2009

The groups recommended to receive the novel H1N1 influenza vaccine include:

- Pregnant women because they are at higher risk of complications and can potentially provide protection to infants who cannot be vaccinated;
- Household contacts and caregivers for children younger than 6 months of age;
- Healthcare and emergency medical services personnel because infections among healthcare workers have been reported and this can be a potential source of infection for vulnerable patients;
- All people from 6 months through 24 years of age;
- Children from 6 months through 18 years of age because we have seen many cases of novel H1N1 influenza in children and they are in close contact with each other in school and day care settings, which increases the likelihood of disease spread; and
- Young adults 19 through 24 years of age because we have seen many cases of novel H1N1 influenza in these healthy young adults and they often live, work, and study in close proximity, and they are a frequently mobile population; and,
- Persons aged 25 through 64 years who have health conditions associated with higher risk of medical complications from influenza.

The Lancet, Volume 374, Issue 9688, Pages 451 - 458, 8 August 2009

Findings:

From April 15 to May 18, 2009, 34 confirmed or probable cases of pandemic H1N1 in pregnant women were reported to CDC from 13 states. 11 (32%) women were admitted to hospital. The estimated rate of admission for pandemic H1N1 influenza virus infection in pregnant women during the first month of the outbreak was higher than it was in the general population (0.32 per 100 000 pregnant women, 95% CI 0.13—0.52 vs. 0.076 per 100 000 population at risk, 95% CI 0.07—0.09). Between April 15 and June 16, 2009, six deaths in pregnant women were reported to the CDC; all were in women who had developed pneumonia and subsequent acute respiratory distress syndrome requiring mechanical ventilation.

Interpretation:

Pregnant women might be at increased risk for complications from pandemic H1N1 virus infection. These data lend support to the present recommendation to promptly treat pregnant women with H1N1 influenza virus infection with anti-influenza drugs.

Treatment

- For antiviral treatment of novel influenza (H1N1) virus infection, either oseltamivir or zanamivir are recommended. Recommendations for use of antivirals may change as data on antiviral effectiveness, clinical spectrum of illness, adverse events from antiviral use, and antiviral susceptibility data become available.
- Treatment is recommended for:
 1. All hospitalized patients with confirmed, probable or suspected novel influenza (H1N1).
 2. Patients who are at higher risk for seasonal influenza complications.
- If a patient is not in a high-risk group or is not hospitalized, healthcare providers should use clinical judgment to guide treatment decisions, and when evaluating children should be aware that the risk for severe complications from seasonal influenza among children younger than 5 years old is highest among children younger than 2 years old.

Emergency Use Authorization

- An Emergency Use Authorization (EUA) may be issued by the Food and Drug Administration (FDA) to allow either the use of an unapproved medical product or an unapproved use of an approved medical product during certain types of emergencies with specified agents.

Approved Emergency Use Authorizations

- Tamiflu (oseltamivir)
- Relenza (zanamivir)
- N95 Respirators
- rRT-PCR Flu Panel (NPS, NS, TS, NPS/TS, NA)
- rRT-PCR Swine Flu Panel (also referred to as Swine Flu Test Kit)

CDC Health Advisory 8/6/2009

- **CDC Updates Recommendations for the Amount of Time Persons with Influenza-Like Illness should be Away from Others**

On August 5, 2009, CDC changed its recommendation related to the amount of time people with influenza-like illness should stay away from others (the exclusion period). New guidance indicates that people with influenza-like illness should stay home for at least 24 hours after their fever is gone (without the use of fever-reducing medicine). A fever is defined as having a temperature of 100° Fahrenheit or 37.8° Celsius or greater. This is a change from the previous recommendation that ill persons stay home for 7 days after illness onset or until 24 hours after the resolution of symptoms, whichever was longer. The new recommendation applies to camps, schools, businesses, mass gatherings, and other community settings where the majority of people are not at increased risk for influenza complications. CDC recommends this exclusion period regardless of whether or not antiviral medications are used. This guidance does not apply to health care settings where the exclusion period continues to be for 7 days from symptom onset or until 24 hours after the resolution of symptoms, whichever is longer.

http://www.cdc.gov/h1n1flu/guidelines_infection_control.htm for guidance on infection control in health care settings.)

OCHMO Response

- Monitoring the evolving event.
- Reviewing CDC guidance documents.
- Attending CDC briefing by telecon.
- NASA Health Alert sent to the NASA workforce.
- Reviewing NASA Pandemic Plan Guidance – 2006 (Updated Appendix C on 8/10/2009).
- Updating the NASA OH Website.
- Ongoing communications with senior leadership, OSPP, HR, OH community.

OCHMO Response

- Advised Occupational Medicine Clinics should:
 - Ensure clinic representative at all EOC briefings related to the potential flu outbreak.
 - Be prepared to coordinate with local health department authorities as requested.
 - Review and become familiar with Appendix C of the OCHMO Draft Pandemic Plan which details clinic-specific infection control guidelines (updated 8/10/2009).

OCHMO Response

- Review and ramp-up their on-site infection control plans as needed.
- Monitor websites for influenza updates:
 - CDC
 - WHO
 - NEJM
- Monitor CDC teleconferences and /or download the subsequent content of the teleconferences and share with clinic staff.
- Refer employees to the CDC link and the www.flu.gov site on the first page of the OH website.

OCHMO Forward Work

Initiating discussions with OSPP, HR, and OGC concerning limitation of exposure in the workplace:

- “Send home” policies
- Liberal use of telecommuting

OCHMO has designated representation on the Pandemic

Influenza Working Group:

- Dr. Vincent Michaud (primary)
- Dr. Richard Williams (backup)
- Dr. Victor Schneider (backup)

Provided input to draft Executive Order:

“Executive Department and Agency Actions to Support
Community Preparedness and Response to the 2009 H1N1
Influenza Pandemic”