Novel Influenza A (H1N1)

H1N1 Healthcare Briefings

September 10, 2009

P. Bryon Backenson
Director, Investigations Unit
Bureau of Communicable Disease Control
New York State Department of Health
What is Influenza?

• Acute, febrile respiratory illness affecting nose, throat, bronchi and lungs

• Epidemics caused by influenza viruses A and B

• Occurs worldwide, with considerable morbidity/mortality each year

• Symptoms often rapid onset
Symptoms of the Flu

• **Influenza-like illness**
  • Fever (≥100°F) AND cough or sore throat

• **Other symptoms**
  • Chills, muscle aches, headache, lack of energy, runny nose, shortness of breath, nausea, abdominal pain, diarrhea

• **Incubation period (time from infection to illness)**
  • 1-7 days, more likely 1-4 days

• **Viral shedding and transmission**
  • Can begin 1 day before symptom onset
  • Virus is spread by both droplets and indirect transmission

• **Symptoms similar to other upper respiratory diseases (common cold, pneumonia, etc.)**
Conditions that place people at high-risk for flu complications

- Children <5 years
- Persons with the following underlying medical conditions:
  - Chronic lung disease, including asthma
  - Chronic heart (except hypertension), kidney, or liver disease
- Pregnant women
- Residents of nursing homes and other chronic-care facilities
- Adults ≥65 years

The classification of these groups as high risk for novel H1N1-related complications may be subject to change based on accumulating epidemiologic information.
Rapidly Evolving Picture

- Novel Influenza A (H1N1), “Novel flu”
- First reported April 21 in an MMWR on cases in California and Texas; recognized in Mexico
- April 24 - recognition of large outbreak at a school in Queens
- Virus contains genetic material from Asian swine flu, N. American swine flu, human flu, bird flu
- Virus is NON-SUB-TYPEABLE by standard laboratory protocols
  - Initially, only a few labs in the country (CDC, Public Health Labs) could subtype this virus
  - Commercial labs have now begun testing for novel flu
Novel Influenza A (H1N1) Key Points

- Person-to-person transmission
  - Droplet and indirect transmission
- Antivirals
  - Most isolates sensitive to oseltamivir, zanamivir
  - Resistance being closely monitored
- Most cases relatively mild – low mortality
  - Behavior to date resembles seasonal flu
- Affecting younger age groups
  - Median age US – 12 years
  - Older adults >age 60 may have some immunity
Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2008-09

- A (2009 H1N1)
- A (Unable to Subtype)
- A (H3)
- A (H1)
- A (Subtyping not Performed)
- B
- Percent Positive

Number of Positive Specimens

Week

Percent Positive
*This map indicates geographic spread and does not measure the severity of influenza activity.*
Teens and Young Adults Disproportionately Affected -- Few Cases Among Elderly

Seasonal 2007-08

N=3,930

2009 H1N1 (April - Jun)

N=312

*April 12-June 30

Emerging Infections Program

CDC
National Case Characteristics
(July 16, 2009)

- 50% male
- Median age
  - All cases: 12 years
  - Hospitalized cases: 20 years
  - Deceased cases: 37 years
- Counts of confirmed cases do not reflect actual number of cases due to limited testing capabilities
Individual Case Counts Do Not Represent True Burden of H1N1

- Reported cases significantly underestimate actual number of cases
  - People did not seek care for mild illness
  - Not all patients were tested
  - Limited laboratory capacity for testing
  - Testing restricted to severely ill or high risk patients
- 43,771 confirmed and probable cases reported to CDC from 4/15 to 7/24
- Estimates of >1,000,000 H1N1 illnesses from April through June
Estimated Rates of Novel H1N1 Cases April 15 to July 24, 2009

*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:
Novel H1N1 U.S. Hospitalization Rate
April 15 to July 24, 2009

Hospitalizations per 100,000 Population in Age Group

- 0-4 Yrs: 4.5 (n=953)
- 5-24 Yrs: 2.1 (n=1718)
- 25-49 Yrs: 1.1 (n=1184)
- 50-64 Yrs: 1.2 (n=658)
- ≥65 Yrs: 1.7 (n=225)

*Hospitalizations with unknown ages are not included (n=273)
*Rate / 100,000 by Single Year Age Groups: Denominator source: 2008 Census Estimates, U.S. Census Bureau at:
National Data-Hospitalized Cases

Epidemiology/Surveillance
Distribution by Age Group of Influenza Hospitalized Cases
Emerging Infections Program - Pandemic H1N1 - 14 JUL 2009

[Graph showing the distribution of hospitalized cases by age group for Seasonal 2007-08 and Pandemic 2009*]

7/14/09

*April 12 – June 30
National Data
Pediatric Hospitalizations

NVSN Influenza Laboratory-Confirmed Cumulative Hospitalization Rates for Children 0 - 4 Years, 2008-09 and Previous Three Seasons
Novel H1N1 U.S. Deaths, by Age Group
Influenza-Associated Pediatric Deaths

Number of Influenza-Associated Pediatric Deaths by Week of Death:
2005-06 season to present

- **2005-06**
  - Number of Deaths Reported = 46

- **2006-07**
  - Number of Deaths Reported = 78

- **2007-08**
  - Number of Deaths Reported = 88

- **2008-09**
  - Number of Deaths Reported = 110

Legend:
- Blue: Deaths Reported Current Week
- Yellow: 2009 Influenza A (H1N1) Deaths Reported Current Week
- Green: Deaths Reported Previous Weeks
- Pink: 2009 Influenza A (H1N1) Deaths Reported Previous Weeks
The New York State Picture

Novel H1N1 Influenza
New York State
Total Lab-Confirmed: 2253
July 3, 2009

Note: NYS discontinued daily case reporting on 7/3/09
Positive Influenza Laboratory Results reported on ECLRS, by Week, 2008-09 (N=30,339†)

**Influenza A Subtype Not Specified** may include Seasonal Influenza A (H1N1), Seasonal Influenza A (H3N2) and Novel Influenza A (H1N1)
New York State

Positive Influenza Laboratory Results
Reported on ECLRS - Four Seasons

*Note: Routine influenza surveillance during prior seasons ended with week 20.
Patients Hospitalized with Laboratory-confirmed Influenza Reported on HERDS - Four Seasons

New York State

Note: Routine influenza surveillance during prior seasons ended with week 20.
Development of Targeted Guidance for Multiple Audiences

- Local Health Departments
- Hospitals, clinics
- Long Term Care Facilities
- EMS Agencies
- Infection Control
- Information for School Officials and Parents
  - Elementary and Secondary Schools
  - Day care centers
  - Colleges, Universities and Boarding Schools
- Information for Summer Camps
- Physician Guidance including clinical Guidelines for Testing and Treatment
- Bio-safety Guidelines for laboratories
- Guidance for high risk populations including migrant communities, border and tribal health; pregnant women; children
Epidemiology and Surveillance: Changing Priorities

Early Objectives:
• Focus: new disease, find out where it is and where it is going
• Identify new geographic areas
• Identify severe illness
• Identify outbreaks/clusters

Objectives Going into the Future:
• Focus: recognition that this is not going away
• Characterize continuing transmission
• Watch for changes in transmission, severity, antiviral resistance
• Similar to seasonal flu surveillance, with enhancements
New York State Surveillance Plans

• Enhanced surveillance over the summer
  • Mild illness=ILI net
  • Severe illness
  • Mortality
• Participated in CSTE - CDC working group to solidify national surveillance plans for fall and winter
• Less focus on case counts as they grow larger and become less representative
• Focus on more severe outcomes, sampling surveillance methods
• Continue to monitor changes in the virus through laboratory testing
What is next?

• Capture Lessons Learned from this “live fire” exercise.
  • Good news: mild disease, sensitive to antivirals, vaccine do-able
  • Cautions: ?increased virulence; ?antiviral resistance; ?vaccine challenges
• Not back to business as usual: heightened awareness
• Monitoring and surveillance through the summer into the Fall
• Routinize reporting and laboratory testing
• Further development of protocols for:
  • School closure
  • Social distancing
  • Inter agency coordination
  • Communication, Communication, Communication
• Prepare for mass vaccination campaigns in the Fall
• Learn lessons for seasonal influenza
International Situation Update

United States
Week 33→34

England
Week 32→33

South Africa
Week 32

Australia
Weeks 31+32→32+33

New Zealand
Week 32→33

Note: Week 34: August 17-23

% positive for 2009 H1N1 influenza virus
% positive for other influenza subtypes

CDC - 8/28/09
Predictions ---???

• Novel H1N1 Influenza will cycle back this Fall/Winter and disease severity will remain the same.

• Vaccine availability may impact ability to protect persons recommended for immunization or at risk of complications....