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NH DIVISION OF Public Health Services
Improving health, preventing disease, reducing costs *for all*
Department of Health and Human Services

Circulation of Drifted Influenza A (H3N2) Viruses

Key Points and Recommendations:

1. The predominant strain of influenza circulating in the United States and New Hampshire so far this season is Influenza A (H3N2); however, 52% of A(H3N2) viruses analyzed in the U.S. in October and November this year were antigenically different (drifted) from the H3N2 vaccine virus.
2. During past seasons when influenza A (H3N2) viruses have predominated, increased hospitalization rates and mortality have been observed, especially among older people, very young children, and persons with certain chronic medical conditions.
3. Clinicians should encourage all persons with influenza-like illness who are at high risk for influenza complications to seek care promptly to determine if treatment with influenza antiviral medications is warranted.
4. Clinicians should continue to encourage influenza vaccination for everyone over six months of age (without a medical contraindication) since vaccination may still provide some protection against drifted H3N2, in addition to other strains (Influneza A (H1N1) and Influneza B).
5. Clinicians should encourage use of preventive health practices to decrease the spread of influenza, including respiratory hygiene, cough etiquette, social distancing (e.g., staying home from work and school when ill) and hand washing.

Epidemiology:

Influenza activity in New Hampshire and the United States is currently low, although activity has begun to increase as is typically seen this time of year. In the United States, viral surveillance data indicate that influenza A (H3N2) viruses have predominated so far. Of 85 influenza A (H3N2) viruses collected by U.S. laboratories and genetically characterized at CDC since October 1, 2014, 44 (52%) are significantly different (drifted) from A/Texas/50/2012, which is the U.S. H3N2 vaccine virus strain. All influenza viruses tested for resistance to neuraminidase inhibitors this season have shown susceptibility to both oseltamivir and zanamivir. In New Hampshire, the Public Health Laboratories (PHL) has tested 81 specimens and 7 have been positive for Influenza A (H3).

During past seasons when influenza A (H3N2) viruses have predominated, increased hospitalization rates and mortality have been observed, especially among older people, very young children, and persons with certain chronic medical conditions. In New Hampshire during the 2012-2013 influenza season, influenza A (H3N2) predominated and higher levels of hospitalization and mortality were observed. That year 44 influenza-associated deaths were identified including 3 children. Last year (2013-2014), influenza A (H1N1) predominated and the season was characterized overall by lower levels of outpatient illness and mortality than the previous year, with a total of 14 influenza-associated deaths identified (none pediatric).

Treatment:

Antiviral treatment with oseltamivir or zanamivir is recommended as soon as possible for patients with confirmed or suspected influenza who have severe, complicated, or progressive illness; who require hospitalization; or who are at higher risk for influenza-related complications. Antiviral therapy is most effective when started early in disease course and treatment should be strongly considered if patients have severe illness with influenza-like illness (ILI). Initiation of treatment should not be delayed while awaiting test results.

See attached CDC Health Alert Network Message for detailed guidance on use of antiviral medications.

Diagnostic Testing:

Several tests are available to help with influenza diagnosis, including rapid diagnostic tests (RDTs), immunofluorescence, viral culture and RT-PCR. Healthcare providers using rapid tests should be aware that while useful, there are limitations to rapid tests (variable sensitivity) and a negative rapid test in someone with ILI may be a false negative result.

Specimens from persons with ILI (defined as fever 100°F [37.8°C] or higher with cough and/or sore throat) continue to be collected at the NH Public Health Laboratories (PHL) for testing by RT-PCR.

The approved specimen types for RT-PCR testing at the NH PHL are nasopharyngeal swabs, nasal swabs, throat swabs, nasal aspirates, nasal washes and dual nasopharyngeal/throat swabs, broncheoalveolar lavage, bronchial wash, tracheal aspirate, sputum, and lung tissue from human patients with signs and symptoms of respiratory infection.

To conduct RT-PCR testing for influenza:

- Collect the specimen as soon as possible after illness onset.
- Collection should be by trained personnel using droplet precautions
- Place the sample in viral transport media and store and transport at 4° C within 48 hours of collection.

To acquire viral testing kits, contact the NH Public Health Laboratories office at 1-800-852-3345, extension 4605 or 603-271-4605.

Vaccination:

Healthcare providers should continue to offer influenza vaccine to all patients 6 months and older who have not yet received an influenza vaccine this year. In past seasons when circulating influenza viruses have been antigenically drifted compared to vaccine strains, decreased vaccine effectiveness has been observed; however, vaccination has been found to provide some protection against drifted viruses. Though reduced, this cross-protection might reduce the likelihood of severe outcomes such as hospitalization and death. In addition, vaccination will offer protection against other circulating influenza strains that have not undergone significant antigenic drift from the vaccine viruses (such as influenza A (H1N1) and B viruses).

See the New Hampshire Health Alert Network Message dated September 8, 2014 for detailed information on 2014-15 influenza vaccine:

http://www.dhhs.state.nh.us/dphs/cdcs/alerts/documents/flupositive.pdf

NH DPHS will continue to update you throughout this influenza season when we have new data to share about circulating strains of influenza in New Hampshire, antiviral susceptibilities, or increased rates of illness. Please contact us directly with any questions about influenza or if we can help with your response during this current season.

- For additional information on the 2014-2015 Influenza Season from CDC refer to their website at: http://www.cdc.gov/flu/about/season/flu-season-2014-2015.htm
- For any questions regarding the contents of this message, please contact NH DHHS, DPHS, Bureau of Infectious Disease Control at 603-271-4496 (after hours 1-800-852-3345 ext.5300).
- To change your contact information in the NH Health Alert Network, contact Denise Krol at 603-271-4596 or email Denise.Krol@dhhs.state.nh.us

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From:	Benjamin P. Chan, MD, MPH – State Epidemiologist
Originating Agency:	NH Department of Health and Human Services, Division of Public Health Services

Attachment: CDCHAN-00374: CDC Health Advisory Regarding the Potential for Circulation of Drifted Influenza A (H3N2) Viruses

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CDC HEALTH ADVISORY

Distributed via the CDC Health Alert Network
December 03, 2014, 16:00 ET (4:00 PM ET)
CDCHAN-00374

CDC Health Advisory Regarding the Potential for Circulation of Drifted Influenza A (H3N2) Viruses

CDC is reminding clinicians of the benefits of influenza antiviral medications and urging continued influenza vaccination of unvaccinated patients this influenza season.

Summary

Influenza activity is currently low in the United States as a whole, but is increasing in some parts of the country. This season, influenza A (H3N2) viruses have been reported most frequently and have been detected in almost all states.

During past seasons when influenza A (H3N2) viruses have predominated, higher overall and age-specific hospitalization rates and more mortality have been observed, especially among older people, very young children, and persons with certain chronic medical conditions compared with seasons during which influenza A (H1N1) or influenza B viruses have predominated.

Influenza viral characterization data indicates that 48% of the influenza A (H3N2) viruses collected and analyzed in the United States from October 1 through November 22, 2014 were antigenically "like" the 2014-2015 influenza A (H3N2) vaccine component, but that 52% were antigenically different (drifted) from the H3N2 vaccine virus. In past seasons during which predominant circulating influenza viruses have been antigenically drifted, decreased vaccine effectiveness has been observed. However, vaccination has been found to provide some protection against drifted viruses. Though reduced, this cross-protection might reduce the likelihood of severe outcomes such as hospitalization and death. In addition, vaccination will offer protection against circulating influenza strains that have not undergone significant antigenic drift from the vaccine viruses (such as influenza A (H1N1) and B viruses).

Because of the detection of these drifted influenza A (H3N2) viruses, this CDC Health Advisory is being issued to re-emphasize the importance of the use of neuraminidase inhibitor antiviral medications when indicated for treatment and prevention of influenza, as an adjunct to vaccination.

The two prescription antiviral medications recommended for treatment or prevention of influenza are oseltamivir (Tamiflu®) and zanamivir (Relenza®). Evidence from past influenza seasons and the 2009 H1N1 pandemic has shown that treatment with neuraminidase inhibitors has clinical and public health benefit in reducing severe outcomes of influenza and, when indicated, should be initiated as soon as possible after illness onset. Clinical trials and observational data show that early antiviral treatment can:

- shorten the duration of fever and illness symptoms;
- reduce the risk of complications from influenza (e.g., otitis media in young children and pneumonia requiring antibiotics in adults); and

- reduce the risk of death among hospitalized patients.

Background

As of November 22, influenza activity has increased slightly in most parts of the United States. Surveillance data indicate that influenza A (H3N2) viruses have predominated so far, with lower levels of detection of influenza B viruses and even less detection of H1N1 viruses. During the week ending November 22, 1,123 (91.4%) of the 1,228 influenza-positive tests reported to CDC were influenza A viruses and 105 (8.6%) were influenza B viruses. Of the 85 influenza A (H3N2) viruses collected by U.S. laboratories and antigenically or genetically characterized at CDC since October 1, 2014, 44 (52%) are significantly different (drifted) from A/Texas/50/2012, the U.S. H3N2 vaccine virus. Drifted H3N2 viruses were first detected in late March 2014, after World Health Organization (WHO) recommendations for the 2014-2015 Northern Hemisphere vaccine had been made in mid-February. At that time, a very small number of these viruses had been found among the thousands of specimens that had been collected and tested, but these viruses have become more predominant over time. Most of the drifted H3N2 viruses are A/Switzerland/9715293/2013 viruses, which is the H3N2 virus selected for the 2015 Southern Hemisphere influenza vaccine. These drifted viruses will likely continue to circulate in the United States throughout the season. All influenza viruses tested for resistance to neuraminidase inhibitors this season have shown susceptibility to both oseltamivir and zanamivir. Given the likelihood that the drifted influenza A (H3N2) viruses will continue to circulate this season, CDC is issuing the following recommendations to remind clinicians of CDC's guidance for the use of influenza antiviral medications.

Recommendations for Health Care Providers

- Clinicians should encourage all patients 6 months and older who have not yet received an influenza vaccine this season to be vaccinated against influenza. There are several influenza vaccine options for the 2014-15 influenza season (see http://www.cdc.gov/flu/protect/vaccine/vaccines.htm).

- Clinicians should encourage all persons with influenza-like illness who are at high risk for influenza complications (see list below) to seek care promptly to determine if treatment with influenza antiviral medications is warranted.

Summary of CDC Recommendations for Influenza Antiviral Medications for the 2014-2015 Season:

Influenza Vaccination

Clinicians should continue to vaccinate patients who have not yet received influenza vaccine this season.

Antiviral Use

Clinical benefit is greatest when antiviral treatment is administered early. When indicated, antiviral treatment should be started as soon as possible after illness onset, ideally within 48 hours of symptom onset. However, antiviral treatment might still have some benefits in patients with severe, complicated, or progressive illness and in hospitalized patients when started after 48 hours of illness onset.

Antiviral treatment with oseltamivir or zanamivir is recommended as early as possible for any patient with confirmed or suspected influenza who:

- is hospitalized;

- has severe, complicated, or progressive illness; or

- is at higher risk for influenza complications. This list includes:

- children aged younger than 2 years;
- adults aged 65 years and older;
- persons with chronic pulmonary (including asthma), cardiovascular (except hypertension alone), renal, hepatic, hematological (including sickle cell disease), and metabolic disorders (including diabetes mellitus), or neurologic and neurodevelopment conditions (including disorders of the brain, spinal cord, peripheral nerve, and muscle such as cerebral palsy, epilepsy [seizure disorders], stroke, intellectual disability [mental retardation], moderate to severe developmental delay, muscular dystrophy, or spinal cord injury);
- persons with immunosuppression, including that caused by medications or by HIV infection;
- women who are pregnant or postpartum (within 2 weeks after delivery);
- persons aged younger than 19 years who are receiving long-term aspirin therapy;
- American Indians/Alaska Natives;
- persons who are morbidly obese (i.e., body-mass index is equal to or greater than 40); and
- residents of nursing homes and other chronic-care facilities.

Clinical judgment, on the basis of the patient's disease severity and progression, age, underlying medical conditions, likelihood of influenza, and time since onset of symptoms, is important when making antiviral treatment decisions for high-risk outpatients. **Decisions about starting antiviral treatment should not wait for laboratory confirmation of influenza.**

Oseltamivir is approved for treatment of influenza in persons aged two weeks and older, and for chemoprophylaxis to prevent influenza in people one year of age and older, while zanamivir is approved for treatment of persons seven years and older and for prevention of influenza in persons five years and older. Because high levels of resistance to adamantane antiviral medications continue to be observed among circulating influenza A viruses, adamantanes (rimantadine and amantadine) are not recommended for treatment or prevention of influenza.

Antiviral treatment also can be considered on the basis of clinical judgment for any previously healthy, symptomatic outpatient who is not considered "high risk" with confirmed or suspected influenza, if treatment can be initiated within 48 hours of illness onset.

Special Considerations for Institutional Settings

Use of antiviral chemoprophylaxis to control outbreaks among high risk persons in institutional settings is recommended. An influenza outbreak is likely when at least two residents are ill within 72 hours, and at least one has laboratory confirmed influenza. When influenza is identified as a cause of a respiratory disease outbreak among nursing home residents, use of antiviral medications for chemoprophylaxis is recommended for residents (regardless of whether they have received influenza vaccination) and for unvaccinated health care personnel. For newly-vaccinated staff, antiviral chemoprophylaxis can be administered up to two weeks (the time needed for antibody development) following influenza vaccination. Chemoprophylaxis may also be considered for all employees, regardless of their influenza vaccination status, if the outbreak is caused by a strain of influenza virus that is not well matched by the vaccine. Antiviral chemoprophylaxis should be administered for a minimum of two weeks, and continue for at least seven days after the last known case was identified.

To reduce the substantial burden of influenza in the United States, **CDC continues to recommend a three-pronged approach:**

(1) influenza vaccination. The influenza vaccine contains three or four influenza viruses depending on the influenza vaccine—an influenza A (H1N1) virus, an influenza A (H3N2) virus, and one or two influenza B viruses. Therefore, even if vaccine effectiveness is reduced against drifted circulating viruses, the vaccine will protect against non-drifted circulating vaccine viruses. Further, there is evidence to suggest that vaccination may make illness milder and prevent influenza-related complications. Such protection is possible because antibodies created through vaccination with one strain of influenza viruses will often "cross-protect" against different but related strains of influenza viruses;

(2) use of neuraminidase inhibitor medications when indicated for treatment or prevention. Antiviral treatment with oseltamivir or zanamivir is recommended as early as possible for any patient with confirmed or suspected influenza who: is hospitalized; has severe, complicated, or progressive illness; or is at higher risk for influenza complications. Antiviral chemoprophylaxis should be used for prevention of influenza when indicated for institutional influenza outbreaks, and may be considered for those who have contraindications to influenza vaccination. **CDC recommends antiviral chemoprophylaxis for a minimum of two weeks, and continuing for at least seven days after the last known case was identified.**

(3) use of other preventive health practices that may help decrease the spread of influenza, including respiratory hygiene, cough etiquette, social distancing (e.g., staying home from work and school when ill, staying away from people who are sick) and hand washing.

For More Information:

- Influenza Vaccines Available in United States, 2014–15 Influenza Season
  http://www.cdc.gov/flu/protect/vaccine/vaccines.htm
- Information for healthcare professionals on the use of influenza antiviral medications:
  http://www.cdc.gov/flu/professionals/antivirals/
- Summary of Influenza Antiviral Treatment Recommendations for clinicians:
  http://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm#summary
- Diagnostic Testing for Influenza:
  http://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm#diagnostic
- Interim Guidance for Influenza Outbreak Management in Long-Term Care Facilities:
  http://www.cdc.gov/flu/professionals/infectioncontrol/ltc-facility-guidance.htm

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