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CDC HEALTH ADVISORY

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Three Reports of Oseltamivir Resistant Novel Influenza A (H1N1) Viruses

Summary

On July 7, 2009 the World Health Organization announced the identification of a third person with oseltamivir resistant novel H1N1 virus infection.

All three people fully recovered after uncomplicated illnesses and did not have contact with each other. Two of the three people are reported to have developed illness while taking oseltamivir preventatively after an exposure to a close contact with novel influenza A (H1N). The third person had no known exposure to oseltamivir.

Results from ongoing testing of novel influenza A (H1N1) viruses indicate that oseltamivir resistance remains rare.

The interim recommendations for the use of antiviral medications for chemoprophylaxis and treatment have not been changed http://www.cdc.gov/h1n1flu/recommendations.htm.

Judicious use of antiviral medications is recommended to reduce the possibilities of the development and spread of antiviral resistant influenza viruses.

Use of zanamivir or oseltamivir should be focused on treatment of persons with suspected novel H1N1 influenza who are 1) hospitalized or 2) at higher risk for complications due to influenza, even if hospitalization is not required.

Personal hygiene practices such as hand washing and practices to prevent the spread of an ill person's respiratory secretions should continue during treatment because an infected person may continue to shed virus in respiratory secretions while on therapy.

Use of oseltamivir for chemoprophylaxis should be reserved for certain specific situations, such as when a person at high risk for influenza-related complications is exposed to a person with influenza.

Monitoring for antiviral resistance is ongoing and clinicians and state health departments should continue to follow state and national guidance for submission and testing of clinical specimens from persons with suspected novel influenza A (H1N1) virus infection.

More information will be provided as it becomes available.

Background

Since the first cases of novel influenza A (H1N1) virus were detected in mid-April 2009, more than 94,500 people with confirmed infection have been reported worldwide.

Until recently, all novel H1N1 viruses tested have been susceptible to oseltamivir and zanamivir(neuraminidase inhibitors), and resistant to amantadineand rimantadine (M-2 channel blockers, or adamantanes).

The World Health Organization recently announced the identification of three persons withoseltamivir-resistant novel influenza A (H1N1) virus infection; all viruses had the same mutation that confers resistance, H274Y (H275Y in N1 numbering), in the neuraminidase protein.

- On July 3, The Hong Kong Department of Health reported a resistant virus isolated from a 16 year-old girl who had a fever upon arrival at the Hong Kong International airport on June 11, 2009. Her symptoms began prior to boarding the plane in San Francisco, California. The patient had not taken antiviral agents and reported no illness among close contacts.
- On July 2, 2009, a person infected with an oseltamivir-resistant novel influenza A (H1N1) virus was reported from Japan from an illness on May 15, 2009. This patient also became ill while receiving oseltamivir for chemoprophylaxis.
- On June 29, 2009, the National InfluenzaCenter in Denmark reported an oseltamivir-resistant novel influenza A (H1N1) virus from an unknown date. The virus was isolated from a patient who became ill while taking a chemoprophylaxis dose of oseltamivir to prevent influenza infection after exposure to an ill person.

Guidance for the use of antiviral agents for novel influenza A (H1N1) infection has not changed and is available at: http://www.cdc.gov/h1n1flu/recommendations.htm.

The use of antiviral agents for treatment should be prioritized; zanamiviror oseltamivir are recommended for the treatment of persons with suspected novel H1N1influenza who are 1) hospitalized, or 2) at higher risk for complications due to influenza, even if hospitalization is not required.

Initiation of antiviral therapy should be as early as possible, preferably within 48 hours since symptom onset; however antiviral therapy for hospitalized persons is recommended even if it is not possible to begin therapy until more than 48 hours after symptoms began.

Despite treatment with antiviral agents, including treatment with the neuraminidase inhibitors, patients may continue to shed influenza virus and some persons may shed up to four or more days after beginning therapy. Therefore, patients should continue good hand washing and respiratory hygiene practices during the entire period on therapy to prevent the transmission of virus to close contacts.

Antiviral agents to prevent infection with novel influenza A (H1N1) virus should be used judiciously.

Most people who are infected with novel influenza A (H1N1) virus have had a self limited illness and have recovered without the need for antiviral medications.

Inappropriate use of oseltamivir for chemoprophylaxis could contribute to the development of oseltamivirresistance among novel influenza A (H1N1) viruses and the circulation of resistant viruses in the community.

Use of antiviral agents for chemoprophylaxis can be considered for persons at higher risk from complications due to influenza, or for health care workers with an exposure to influenza due to inadequate personal protective equipment.

Appropriate administrative controls (e.g. having health care personnel stay home from work when ill, and triaging for identification of potentially infectious patients) and personal protective equipment should be used to reduce the need for post-exposure chemoprophylaxis among health care workers.

Antiviral agents are discouraged for prevention of illness in healthy children or adults based on potential exposures in the community, school, camp or other settings.

In addition, there is no safety data regarding long term or frequent use of antiviral agents in children, and limited data for healthy adults.

Efforts to monitor for antiviral resistance among novel influenza A (H1N1) viruses are ongoing in the United Statesand internationally, but detection of oseltamivirresistance among novel influenza A (H1N1) viruses has been rare to date.

Clinicians and clinical laboratories should continue to test patients for novel influenza A (H1N1) infection, especially hospitalized persons with suspect novel H1N1 influenza, and submit clinical specimens or viruses to the local public health laboratory as described by each state health department.

State laboratories should continue to test for novel influenza A (H1N1) and seasonal influenza viruses and follow guidance issued by CDC for surveillance.

Reports on antiviral resistance testing in the United States will be available at:http://www.cdc.gov/flu/weekly.

TABLE: Persons at Higher Risk for Complications of Novel Influenza A (H1N1) Virus Infection

- Children younger than 5 years old. The risk for severe complications from seasonal influenza is highest among children younger than 2
- Adults 65 years of age and older.
- 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, including that caused by medications or by HIV;
- Pregnant women;
- Persons younger than 19 years of age who are receiving long-term aspirin therapy;
- Residents of nursing homes and other chronic-care facilities.

For more information, please see the CDC website:

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

If you have any questions about this Health Advisory, please call the Influenza Division, Epidemiology and Prevention Branch at 404-639-3747.
After normal business hours, contact CDC's duty officer through the CDC Director's Emergency Operation Center (DEOC) at (770) 488-7100.

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