The Centers for Disease Control and Prevention (CDC) has developed the following interim guidance for clinicians who are caring for young children with novel influenza A (H1N1) virus infection. As additional information becomes available, the guidance in this document may be updated. For updated information visit the CDC Web site at www.cdc.gov.

Infants and Children and the Novel H1N1 Virus

Little is currently known about how this novel influenza A (H1N1) virus circulating in people may affect children. However, seasonal influenza and past pandemics, it is known that children, especially those younger than 5 years of age and those who have high risk medical conditions are at increased risk of influenza-related complications. Among children less than 5 years, the risk for severe complications from seasonal influenza is highest among children less than 2 years old.

Illnesses caused by influenza virus infection are difficult to distinguish from illnesses caused by other respiratory pathogens based on symptoms alone. Young children are less likely to have typical influenza symptoms (e.g., fever and cough) and infants may present to medical care with fever and lethargy, and may not have cough or other respiratory symptoms or signs.

Influenza-associated deaths among children, while uncommon, do occur with seasonal influenza with an estimated
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average of approximately 92 influenza-related pediatric deaths each year in the United States. Some deaths in children have been associated with co-infection with influenza and *Staphylococcus aureus*, particularly methicillin resistant *S. aureus* (MRSA).

- Symptoms of severe disease may include:
  - Apnea;
  - Tachypnea;
  - Dyspnea;
  - Cyanosis;
  - Dehydration;
  - Altered mental status;
  - Extreme irritability.

Children with Developmental Disabilities, and Chronic Medical Conditions

Certain children are at higher risk for complications from influenza infection. An investigation of 153 seasonal influenza-associated deaths among children during the 2003-2004 season found that 33 percent of the children had an underlying condition recognized to increase the risk of influenza-related complications, and 20 percent had other chronic conditions; 47 percent had previously been healthy. Chronic neurologic or neuromuscular conditions were present in one third.

Children at higher risk include infants < 6 months and all children with immune suppression, pregnancy, chronic kidney disease, heart disease, HIV/AIDS, diabetes, asthma or other problems of the lungs, sickle cell disease, and those on long-term aspirin therapy for chronic disorders. In addition, children with any condition that affects respiratory function including neurological conditions such as intellectual and developmental disability, cerebral palsy, spinal cord injuries, seizure disorders, metabolic conditions or other neuromuscular disorders have higher risk.

Other children with an increased risk for complications are those with poor nutritional and fluid intake because of prolonged vomiting and diarrhea, and children with an underlying metabolic disorder such as medium-chain acyl-CoA dehydrogenase (MCAD) deficiency who are unable to tolerate prolonged periods of fasting. Because many children with neurological or metabolic conditions may not have the ability to report onset or worsening of symptoms, delay in identification of influenza infection can lead to additional complications. In addition, in one study among HIV-infected children who were not taking antiretroviral medication, influenza was more severe and hospitalization and bacterial complications were more common than among uninfected (i.e., non-HIV infected) children.

Special Considerations for Children

Aspirin or aspirin-containing products (e.g., bismuth subsalicylate—Pepto Bismol) should not be administered to any confirmed or suspected ill case of novel influenza H1N1 virus infection aged 18 years old and younger due to the risk of Reye syndrome. For relief of fever, other anti-pyretic medications such as acetaminophen or non-steroidal anti-inflammatory drugs are recommended.

Children younger than 4 years of age should not be given over-the-counter cold medications without first speaking with a healthcare provider.

Treatment and Chemoprophylaxis of Novel Influenza A (H1N1) Virus with Antivirals

This novel influenza A (H1N1) virus is sensitive (susceptible) to the neuraminidase inhibitor antiviral medications, zanamivir and oseltamivir. It is resistant to the adamantane antiviral medications, amantadine and rimantadine.
Oseltamivir or zanamivir can be used for the treatment and prophylaxis of novel influenza A (H1N1) virus infection. Consult the current recommendations for antiviral use. Recommendations for use of antivirals may change as data on antiviral effectiveness, side effects and antiviral susceptibilities become available.

**Treatment**

For antiviral treatment of novel influenza A (H1N1) virus infection, either oseltamivir or zanamivir are recommended. Oseltamivir has previously been approved for treatment of children one year of age and older. Oseltamivir treatment of children under one year of age with novel influenza A (H1N1) infection was recently approved under an Emergency Use Authorization (EUA) (see below). Oseltamivir dosage is weight-dependent for children one year of age and older, and age-based for children under one year of age. Zanamivir is approved for treatment of children 7 years of age or older, and is an inhaled medication.

Treatment with zanamivir or oseltamivir should be initiated as soon as possible after the onset of symptoms. Evidence for benefits from treatment in studies of seasonal influenza is strongest when treatment is started within 48 hours of illness onset. However, some studies of treatment of seasonal influenza have indicated benefit, including reductions in mortality or duration of hospitalization even for patients whose treatment was started more than 48 hours after illness onset. Recommended duration of treatment is five days.

**Children Under 1 Year of Age**

Children less than one year of age are at higher risk for complications associated with seasonal human influenza virus infections compared to older children, and the risk of influenza complications is especially high for children less than 6 months of age. Children less than 1 year old are also known to be at increased risk of complications during previous pandemics. Limited safety data on the use of oseltamivir (or zanamivir) for
treatment of seasonal influenza in children less than one year of age suggest that severe adverse events are rare.

Oseltamivir use for treatment of children less than 1 year old with novel influenza A (H1N1) infection was recently approved by the FDA under an EUA, and dosing for these children is age-based. See current CDC guidelines for treatment guidance in this age group, including recommendations for who should be prioritized for treatment. For information on the EUA, see Emergency Use Authorization of Tamiflu (oseltamivir).

Chemoprophylaxis

For antiviral chemoprophylaxis of novel influenza A (H1N1) infection, either oseltamivir or zanamivir is recommended. Oseltamivir is approved for chemoprophylaxis in children 12 months or older. However, oseltamivir can be used for chemoprophylaxis under the EUA for children less than 1 year old to prevent novel influenza A (H1N1) infection. Under this EUA, chemoprophylaxis is not recommended for infants less than 3 months old unless the situation is judged to be critical. For children 12 months or older, the dosage is weight-dependent; for children less than 12 months of age, dosage is age-dependent. Zanamivir is approved for chemoprophylaxis in children 5 years or older.

Duration of antiviral chemoprophylaxis post-exposure is 10 days after the last known exposure to an ill confirmed case of novel influenza A (H1N1) virus infection. In limited circumstances, antivirals can be used for pre-exposure protection (see antiviral guidance link), and current guidance should be consulted for details.

Information provided courtesy of the Centers for Disease Control and Prevention. For further information and continuing updates visit www.cdc.gov.