



# Interim Guidance for Clinicians on the Prevention and Treatment of Swine-Origin Influenza Virus Infection in Young Children

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This document provides interim guidance for clinicians who are caring for young children with confirmed or suspected swine-origin influenza A (H1N1) virus infection.

## Background

### *Young children and swine-origin influenza virus (S-OIV)*

Little is currently known about how this new S-OIV circulating in people may affect children. However, we know from seasonal influenza and past pandemics that young children, especially those younger than 5 years of age and children who have high risk medical conditions, are at increased risk of influenza-related complications.

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 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

## Treatment and prevention of swine flu

No vaccine is currently available to prevent S-OIV infection and it is thought unlikely that seasonal influenza vaccine will provide protection against this new virus. While not a substitute for a vaccine, a number of other interventions may be used to decrease the risk of infection and possible complications from S-OIV infection in children.

## Influenza antiviral medications for use in children age 1 year and older

Antiviral treatment with oseltamivir or zanamivir is recommended for children with confirmed or probable S-OIV infection. See [www.cdc.gov/h1n1flu/casedef\\_swineflu.htm](http://www.cdc.gov/h1n1flu/casedef_swineflu.htm) ([http://www.cdc.gov/h1n1flu/casedef\\_swineflu.htm](http://www.cdc.gov/h1n1flu/casedef_swineflu.htm)) for case definitions. Empiric antiviral treatment is also recommended for children with suspected cases of swine influenza A (H1N1) virus infection, especially those with severe illness. Antiviral 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.

Recommendations for use of antivirals may change as data on antiviral effectiveness, side effects and antiviral susceptibilities become available. Antiviral doses recommended for treatment of S-OIV infection in children 1 year of age or older are the same as those recommended for seasonal influenza (Table 1).

Table 1. *Recommended doses of zanamivir and oseltamivir antiviral medications for the treatment and prevention of influenza in children 1-18 years-old*

Antiviral agent	Age group (yrs)				
	1-6	7-9	10-12	13-18	
<b>Zanamivir*</b>	Treatment, influenza A and B	N/A†	10 mg (2 inhalations) twice daily	10 mg (2 inhalations) twice daily	10 mg (2 inhalations) twice daily
	Chemoprophylaxis, influenza A and B	<b>Ages 1-4</b> N/A	<b>Ages 5-9</b> 10 mg (2 inhalations) once daily	10 mg (2 inhalations) once daily	10 mg (2 inhalations) once daily
<b>Oseltamivir</b>	Treatment‡, influenza A and B	Dose varies by child's weight§	Dose varies by child's weight§	Dose varies by child's weight§	75 mg twice daily
	Chemoprophylaxis, influenza A and B	Dose varies by child's weight¶	Dose varies by child's weight¶	Dose varies by child's weight¶	75 mg/day
<b>Duration of Treatment</b>	<b>Treatment</b>	Recommended duration for antiviral treatment is 5 days.			
	<b>Chemoprophylaxis</b>	Recommended duration is 10 days after the last known exposure.			

## Children Younger than 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. The characteristics of human infections with S-OIV are still being studied, and it is not known whether infants are at higher risk for complications associated with S-OIV infection compared to older children. However, children less than 1 year old are known to be at increased risk of complications from seasonal influenza infection and during previous pandemics. Limited safety data on the use of oseltamivir (or zanamivir) is available from children less than one year of age, and oseltamivir is not licensed for use in children less than 1 year old. Available data comes from use of oseltamivir for treatment of seasonal influenza. However, these data suggest that severe adverse events are rare, and the Infectious Diseases Society of America recently noted that "... limited retrospective data on the safety and efficacy of oseltamivir in this young age group have not demonstrated age-specific drug-attributable toxicities to date."

Because infants typically have higher rates of morbidity and mortality from influenza compared to healthy older children, infants with S-OIV infections may benefit from treatment using oseltamivir. Oseltamivir use for children less than 1 year old was recently approved by the FDA under an Emergency Use Authorization (EUA), and dosing for these children is age-based. (Table 2).

Table 2. *Recommended doses of oseltamivir antiviral medication for the treatment of S-OIV influenza for children less than 1 year of age.*

Age	Recommended treatment dose for 5 days
<3 months	12 mg twice daily
3-5 months	20mg twice daily
6-11 months	25 mg twice daily

### *Use of fever-reducing medications in children*

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

## Antiviral Chemoprophylaxis

For antiviral chemoprophylaxis of S-OIV infection, either oseltamivir or zanamivir are recommended for children 1 year of age or older

(Table 1). Oseltamivir can be used for chemoprophylaxis under the EUA for children less than 1 year-old (Table 3). Under this EUA, chemoprophylaxis is not recommended for infants less than 3 months old unless the situation is judged to be critical. Duration of antiviral chemoprophylaxis *post-exposure* is 10 days after the last known exposure to an ill confirmed case of swine influenza A (H1N1) virus infection. For *pre-exposure* protection, chemoprophylaxis should be given during the potential exposure period and continued for 10 days after the last known exposure to an ill confirmed case of swine influenza A (H1N1) virus infection.

Table 3. *Recommended doses of oseltamivir antiviral medication for the prevention of swine influenza for children less than 1 year of age.*

TABLE 3 HERE

Age	Recommended prophylaxis dose for 10 days
<3 months	Not recommended unless situation judged critical
3-5 months	20mg once daily
6-11 months	25 mg once daily

Antiviral chemoprophylaxis with either oseltamivir or zanamivir is **recommended** for the following children:

1. Household close contacts who are at high-risk for complications of influenza (children younger than 5 years old , pregnant women, persons  $\geq 65$  years-old and those with certain chronic medical conditions) of a confirmed or suspected case.
2. School children or daycare attendees who are at high-risk for complications of influenza (children younger than 5 years old, pregnant women, persons  $\geq 65$  years-old and those with certain chronic medical conditions) who had close contact (face-to-face) with a confirmed, probable, or suspected case.
3. Children who traveled to Mexico who are at high-risk for complications of influenza (children younger than 5 years old pregnant women, persons  $\geq 65$  years-old and those with certain chronic medical conditions).

## Other measures to prevent swine influenza in children

- In addition to antiviral medications, other information on measures that can help prevent the spread of influenza can be found at [www.cdc.gov/swineflu](http://www.cdc.gov/swineflu) (<http://www.cdc.gov/swineflu>) under the following headings:
- [Interim Recommendations for Facemask and Respirator Use in Certain Community Settings Where Swine Influenza A \(H1N1\) Virus Transmission Has Been Detected](http://www.cdc.gov/h1n1flu/masks.htm) (<http://www.cdc.gov/h1n1flu/masks.htm>)
- [Interim Guidance for Swine influenza A \(H1N1\): Taking Care of a Sick Person in Your Home](http://www.cdc.gov/h1n1flu/guidance_homecare.htm) ([http://www.cdc.gov/h1n1flu/guidance\\_homecare.htm](http://www.cdc.gov/h1n1flu/guidance_homecare.htm))
- [Interim Guidance on Antiviral Recommendations for Patients with Confirmed or Suspected Swine Influenza A \(H1N1\) Virus Infection and Close Contacts](http://www.cdc.gov/h1n1flu/recommendations.htm) (<http://www.cdc.gov/h1n1flu/recommendations.htm>)
- [Interim Guidance for Infection Control for Care of Patients with Confirmed or Suspected Swine Influenza A \(H1N1\) Virus Infection in a Healthcare Setting](http://www.cdc.gov/h1n1flu/guidelines_infection_control.htm) ([http://www.cdc.gov/h1n1flu/guidelines\\_infection\\_control.htm](http://www.cdc.gov/h1n1flu/guidelines_infection_control.htm)) Apr 24, 2009

[Interim CDC Guidance for Nonpharmaceutical Community Mitigation in Response to Human Infections with Swine Influenza \(H1N1\) Virus](http://www.cdc.gov/h1n1flu/mitigation.htm) (<http://www.cdc.gov/h1n1flu/mitigation.htm>) Apr 26, 2009, 11:45 PM ET

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