
CDPH Interim Guidance on Antiviral Recommendations for Swine-origin Influenza A (H1N1) Virus (S-OIV)

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Summary:

CDPH recommends the limited use of treatment and prophylaxis with either oseltamivir or zanamvir to reduce the level of severe disease and mortality that may be caused by swine influenza.

Antiviral treatment should be considered for confirmed, probable or highly suspected cases of swine-origin influenza A (H1N1) virus (S-OIV) infection. Treatment is recommended for hospitalized patients and patients at higher risk for severe influenza.

Antiviral chemoprophylaxis is recommended for

- Household close contacts of a confirmed, probable or highly suspected case who are at high-risk for severe influenza
- Health care workers or public health workers who were not using appropriate personal protective equipment during close contact with an infectious case that is confirmed, probable, or highly suspected.
- Patients at high-risk for severe influenza who have had close contact with an infectious health care worker who is a confirmed or probable case.

These recommendations also apply to non-medical institutions.

In localities of California where seasonal influenza caused by oseltamivir-resistant human A (H1N1) viruses is still occurring , consider using rimantadine or amantadine along with oseltamivir until the case or source of exposure is confirmed as S-OIV infection.

Prevention of the spread of S-OIV infection relies on non-pharmacologic infection control measures. Therefore, persons with mild influenza should be directed to remain at home rather than visit health care facilities. Medical care providers can be contacted by telephone or email for questions about treatment.

Patients should seek medical care for symptoms of more severe influenza, such as

- difficulty breathing
- unable to take adequate fluids
- confusion or altered mental status; severe headache or other pain that is clearly not controlled by usual medications; sudden weakness, or change in vision
- rapid worsening of symptoms

These interim recommendations are currently more restrictive than those of the federal Centers for Disease Control and Prevention. Recommendations may change as data on antiviral

effectiveness, clinical spectrum of illness, adverse events from antiviral use, and antiviral susceptibility data become available.

Objective: To provide interim guidance on the use of antiviral agents for treatment and chemoprophylaxis of swine influenza A (H1N1) virus infection.

Principles: The priority for the use of the limited supplies of antiviral medications is to reduce the level of severe disease and mortality for swine influenza.

The need to protect individuals from infection with S-OIV must be weighed with existing information on disease severity, treatment efficacy, current and future antiviral resistance, current and future supplies of medications, and other factors.

Case Definitions for Infection with Swine-origin Influenza A (H1N1) Virus (S-OIV)

A *confirmed case* of S-OIV infection is defined as a person with an acute febrile respiratory illness with laboratory confirmed S-OIV infection at CDC by one or more of the following tests:

1. real-time RT-PCR
2. viral culture

A *probable case* of S-OIV infection is defined as a person with an acute febrile respiratory illness who is positive for influenza A, but negative for H1 and H3 by influenza RT-PCR

For the purposes of this guidance, a *highly suspected case* of S-OIV infection is defined as a person with acute febrile respiratory illness with onset

- within 7 days of close contact with a person who is a confirmed case of S-OIV infection, or
- within 7 days of travel to Mexico. In border communities with increasing rates of S-OIV infection, this criterion may be impractical to base decisions on use of antiviral medications.)

For the purposes of this guidance, a *suspected case* of S-OIV infection is defined as a person with acute febrile respiratory illness with onset

- resides in a community where there are one or more confirmed cases of S-OIV infection.

Infectious period for a confirmed case of swine influenza A (H1N1) virus infection is defined as 1 day prior to the case's illness onset to 7 days after onset.

Close contact is defined as: within about 6 feet of an ill person who is a confirmed or suspected case of swine-origin influenza A (H1N1) virus infection during the case's infectious period.

Acute respiratory illness is defined as recent onset of at least two of the following: rhinorrhea or nasal congestion, sore throat, cough (with or without fever or feverishness)

High-risk groups: A person who is at high-risk for severe complications of swine influenza A (H1N1) virus infection is defined as the same for seasonal influenza:

- Children younger than 5 years old
- 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), or metabolic disorders (including diabetes mellitus);
- immunosuppression, including that caused by medications or by HIV;
- pregnant women
- younger than 19 years of age and receiving long-term aspirin therapy
- any condition (e.g., cognitive dysfunction, spinal cord injuries, severe seizure disorders, or other neuromuscular disorders) that can compromise respiratory function or the handling of respiratory secretions or that can increase the risk for aspiration; and
- residents of nursing homes and other chronic-care facilities.

(see MMWR: Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2008).

Antiviral Treatment

Cases of Swine-origin Influenza A (H1N1) Virus Infection

Recommendations for use of antivirals may change as data on antiviral effectiveness, clinical spectrum of illness, adverse events from antiviral use, and antiviral susceptibility data become available.

Antiviral treatment should be considered for confirmed, probable or highly suspected cases of swine-origin influenza A (H1N1) virus infection. Treatment is recommended for hospitalized patients and patients at higher risk for severe influenza.

Only RT-PCR or viral culture can confirm infection with swine-origin influenza A (H1N1) virus. The test performance of rapid antigen tests and immunofluorescence tests for detection of swine-origin influenza A (H1N1) virus is unknown. Persons who might have swine-origin influenza A (H1N1) virus and who test positive for influenza A using one of these tests should have confirmatory RT-PCR or viral culture testing to confirm the presence of swine-origin influenza A (H1N1) virus. A negative rapid antigen or immunofluorescence test cannot be used to rule out swine-origin influenza A (H1N1) virus infection.

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 susceptibilities and effectiveness become available. Antiviral doses recommended for treatment of swine-origin influenza A (H1N1) virus infection in adults or children 1 year of age or older are the same as those recommended for seasonal

influenza ([Table 1](#)). Oseltamivir use for children < 1 year old was recently approved by the U.S. Food and Drug Administration (FDA) under an Emergency Use Authorization (EUA), and dosing for these children is age-based ([Table 2](#)).

Note: Areas that continue to have seasonal influenza activity, especially those with circulation of oseltamivir-resistant human A (H1N1) viruses, might prefer to use either zanamivir or a combination of oseltamivir and rimantadine or amantadine to provide adequate empiric treatment or chemoprophylaxis for patients who might have human influenza A (H1N1) infection.

Antiviral Chemoprophylaxis

For antiviral chemoprophylaxis of swine-origin influenza A (H1N1) virus infection, either oseltamivir or zanamivir are recommended ([Table 1](#)). Duration of antiviral chemoprophylaxis *post-exposure* is 10 days after the last known exposure to an ill confirmed case of swine-origin influenza A (H1N1) virus infection. Post exposure prophylaxis should be considered for contact during the *infectious period* (e.g., one day before until 7 days after the case's onset of illness). If the contact occurred more than 7 days earlier, then prophylaxis is not necessary. 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-origin influenza A (H1N1) virus infection. Oseltamivir can also be used for chemoprophylaxis under the EUA ([Table 3](#)).

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

- Household close contacts of a confirmed, probable or highly suspected case who are at high-risk for severe influenza
- Health care workers or public health workers who were not using appropriate personal protective equipment during close contact with an infectious case that is confirmed, probable, or highly suspected.. See guidelines on [personal protective equipment](#).
- Patients at high-risk for severe influenza who have had close contact with an infectious health care worker who is a confirmed or probable case.

Institutional Settings

Similar recommendations apply to persons working, residing in or attending non-medical institutions, including educational, residential and correctional institutions.

Confirmed, probable or highly suspected cases of swine-origin influenza A (H1N1) virus infection associated with these settings should be considered for treatment, especially if at higher risk for influenza complications.

Contacts who have shared the same bedroom or cell of a confirmed or probable case and who are at high-risk for complications of influenza (e.g., persons with certain chronic medical conditions, persons 65 or older, children younger than 5 years old, and pregnant women) can be offered antiviral chemoprophylaxis.

Additional institutional contacts of a confirmed or probable case can be considered for treatment once symptomatic, especially if at high risk for severe influenza.

Children Under 1 Year of Age

Children under one year of age are at high risk for complications from seasonal human influenza virus infections. The characteristics of human infections with swine-origin H1N1 viruses are still being studied, and it is not known whether infants are at higher risk for complications associated with swine-origin H1N1 infection compared to older children and adults. Limited safety data on the use of oseltamivir (or zanamivir) are available from children less than one year of age, and oseltamivir is not licensed for use in children less than 1 year of age. Available data come from use of oseltamivir for treatment of seasonal influenza. These data suggest that severe adverse events are rare, and the Infectious Diseases Society of America recently noted, with regard to use of oseltamivir in children younger than 1 year old with seasonal influenza, 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." (See [IDSA guidelines for seasonal influenza](#).)

Because infants typically have high rates of morbidity and mortality from influenza, infants with swine-origin influenza A (H1N1) infections may benefit from treatment using oseltamivir.

Table 2. Dosing recommendations for antiviral treatment of children younger than 1 year using oseltamivir.	
Age	Recommended treatment dose for 5 days
<3 months	12 mg twice daily
3-5 months	20 mg twice daily

6-11 months	25 mg twice daily
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Table 3. Dosing recommendations for antiviral chemoprophylaxis of children younger than 1 year using oseltamivir.

Age	Recommended prophylaxis dose for 10 days
<3 months	Not recommended unless situation judged critical due to limited data on use in this age group
3-5 months	20 mg once daily
6-11 months	25 mg once daily

Healthcare providers should be aware of the lack of data on safety and dosing when considering oseltamivir use in a seriously ill young infant with confirmed swine-origin H1N1 influenza or who has been exposed to a confirmed swine H1N1 case, and carefully monitor infants for adverse events when oseltamivir is used. See [additional information on oseltamivir for this age group](#).

Pregnant Women

Oseltamivir and zanamivir are "Pregnancy Category C" medications, indicating that no clinical studies have been conducted to assess the safety of these medications for pregnant women. Because of the unknown effects of influenza antiviral drugs on pregnant women and their fetuses, oseltamivir or zanamivir should be used during pregnancy only if the potential benefit justifies the potential risk to the embryo or fetus; the manufacturers' package inserts should be consulted. However, no adverse effects have been reported among women who received oseltamivir or zanamivir during pregnancy or among infants born to women who have received oseltamivir or zanamivir. Pregnancy should not be considered a contraindication to oseltamivir or zanamivir use. Because of its systemic activity, oseltamivir is preferred for treatment of pregnant women. The drug of choice for prophylaxis is less clear. Zanamivir may be preferable because of its limited systemic absorption; however, respiratory complications that may be associated with zanamivir because of its inhaled route of administration need to be considered, especially in women at risk for respiratory problems.

Adverse Events and Contraindications

For further information about influenza antiviral medications, including contraindications and adverse effects, please see the following:

- [Antiviral Agents for Seasonal Influenza: Side Effects and Adverse Reactions](#)
- [MMWR: Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices \(ACIP\), 2008](#)
MMWR August 8, 2008 / 57(RR07);1-60

Adverse events from influenza antiviral medications should be reported through the [U.S. FDA Medwatch website](#).

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