

Interim Guidance for Clinicians on Identifying and Caring for Patients with Swine-origin Influenza A (H1N1) Virus Infection

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Objective: This document provides interim guidance for clinicians who might provide care for patients with confirmed novel influenza A (H1N1) or suspected novel influenza A (H1N1) virus infection (previously referred to as swine-origin influenza virus). **This document has changed as more ill persons have been identified and more epidemiologic and clinical information has been gathered.**

CDC and the Tennessee Department of Health (TDH) recommend that testing be prioritized for those with severe respiratory illness and those at highest risk of complications from influenza, as reflected in this document.

In Tennessee, as of May 5 2009, testing will be prioritized for (1) patients admitted to intensive care with severe sepsis or respiratory distress; (2) admitted for severe respiratory distress/pneumonia; (3) women who are pregnant; and (4) healthcare workers.

Transmission

Transmission of novel influenza A (H1N1) is being studied as part of the ongoing outbreak investigation, but limited data available indicate that this virus is transmitted in ways similar to other influenza viruses. Seasonal human influenza viruses are thought to spread from person to person primarily through large-particle respiratory droplet transmission (e.g., when an infected person coughs or sneezes near a susceptible person). Transmission via large-particle droplets requires close contact between source and recipient persons because droplets do not remain suspended in the air and generally travel only a short distance (< 6 feet). Contact with contaminated surfaces is another possible source of transmission and transmission via droplet nuclei (also called “airborne” transmission). Because data on the transmission of novel H1N1 viruses are limited, the potential for ocular, conjunctival, or gastrointestinal infection is unknown. Since this is a novel influenza A virus in humans, transmission from infected persons to close contacts might be common. All respiratory secretions and bodily fluids (diarrheal stool) of novel influenza A (H1N1) cases should be considered potentially infectious.

Incubation period

The estimated incubation period is unknown and could range from 1-7 days, and more likely 1-4 days.

Persons with confirmed novel influenza A (H1N1) virus infection

View the [Case definitions for Confirmed, Probable and Suspected cases](#).

Clinical findings

Patients with uncomplicated disease due to confirmed novel influenza A (H1N1) virus infection have experienced fever, chills, headache, upper respiratory tract symptoms (cough, sore throat, rhinorrhea, shortness of breath), myalgias, arthralgias, fatigue, vomiting, or diarrhea. In New York City, 95% of patients with novel influenza A (H1N1) met the case definition for influenza-like illness (subjective fever plus cough and/or sore throat) (<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm58d0430a1.htm>)

Complications

There is insufficient information to date about clinical complications of this novel influenza A (H1N1) virus infection. Among persons infected with previous variants of swine influenza viruses, clinical syndromes have ranged from mild respiratory illness, to lower respiratory tract illness, dehydration, or pneumonia. Deaths caused by previous variants of swine influenza viruses have occasionally occurred. Although data on the spectrum of illness is not yet available for this novel influenza A (H1N1), clinicians should expect complications to be similar to seasonal influenza: exacerbation of underlying chronic medical conditions, upper respiratory tract disease (sinusitis, otitis media, croup) lower respiratory tract disease (pneumonia, bronchiolitis, status asthmaticus), cardiac (myocarditis, pericarditis), musculoskeletal (myositis, rhabdomyolysis), neurologic (acute and post-infectious encephalopathy, encephalitis, febrile seizures, status epilepticus), toxic shock syndrome, and secondary bacterial pneumonia with or without sepsis.

Groups at high risk for complications

Currently, insufficient data are available to determine who is at higher risk for complications of novel influenza A (H1N1) virus infection. Thus, at this time, the same

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age and risk groups who are at higher risk for seasonal influenza complications should also be considered at higher risk for swine-origin influenza complications.

Groups at higher risk for seasonal influenza complications include:

- Children less than 5 years old;
- Persons aged 65 years or older;
- Children and adolescents (less than 18 years) who are receiving long-term aspirin therapy and who might be at risk for experiencing Reye syndrome after influenza virus infection;
- Pregnant women;
- Adults and children who have chronic pulmonary, cardiovascular, hepatic, hematological, neurologic, neuromuscular, or metabolic disorders;
- Adults and children who have immunosuppression (including immunosuppression caused by medications or by HIV);
- Residents of nursing homes and other chronic-care facilities.

Medical care for patients with novel influenza A (H1N1) virus

Not all patients with suspected novel influenza (H1N1) infection need to be seen by a health care provider. Patients with severe illness and those at high risk for complications from influenza (see list above) should contact their medical provider or seek medical care.

Which patients should be tested for novel influenza A (H1N1) virus

Clinicians should test persons for the novel influenza (H1N1) virus if they have an acute febrile respiratory illness or sepsis-like syndrome. Certain groups may have atypical presentations including infants, elderly and persons with compromised immune systems. Priority for testing includes persons who 1) require hospitalization or 2) are at high-risk for severe disease (as listed above). To test for novel H1N1 influenza virus, upper respiratory specimens, such as a nasopharyngeal swab or aspirate, nasal swab plus a throat swab or nasal wash, or tracheal aspirate should be collected. [Persons who perform nasal and tracheal aspirate collections on ill persons](#) require appropriate personal protective equipment. Specimens should be sent to the Tennessee state public health laboratory. Please use the following specimen submission form: <http://health.state.tn.us/Downloads/TNNovelFluSpecimenForm.pdf>. Guidance on collecting influenza specimens from the respiratory tract can be found on: http://health.state.tn.us/Downloads/specimen_collection_resp_tract_1.pdf

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Not all people with suspected novel influenza (H1N1) infection need to have the diagnosis confirmed, especially if the person resides in an affected area or if the illness is mild. Recommendations on who to test may differ by state or community. Clinicians should be aware of local guidance on testing and should use their clinical judgment in addition to this guidance for deciding when to test for novel influenza A (H1N1). Please review the algorithm for clinicians available at <http://health.state.tn.us/H1N1.htm>

Reporting suspect novel influenza A (H1N1) virus infection

As of May 5, 2009, the TDH is interested in receiving reports of suspected cases of H1N1 for: 1) patients admitted to intensive care with severe sepsis or respiratory distress; (2) admitted for severe respiratory distress/pneumonia; (3) women who are pregnant; (4) healthcare workers and (5) suspected cases of nosocomial transmission of H1N1 to staff and/or patients. Please report such cases to local health departments: <http://health.state.tn.us/localdepartments.htm>

Treatment of novel influenza A (H1N1)

The novel influenza (H1N1) virus is susceptible to both oseltamivir and zanamivir. It is resistant to amantadine and rimantadine. View Interim guidance on [antiviral treatment](#) for novel influenza A (H1N1).

Additional Therapy

Additional therapy such as antibacterial agents, should be used at the discretion of the clinicians given the patients clinical presentation. For antibacterial treatment of pneumonia, clinical guidance for community-acquired pneumonia should be followed and can be accessed at <http://www.journals.uchicago.edu/doi/pdf/10.1086/511159?cookieSet=1>.

For hospitalized patients with severe community-acquired pneumonia (CAP) requiring intensive care unit admission, methicillin-resistant Staphylococcus aureus (MRSA) infection should be suspected and treated empirically in addition to other causes of CAP if they have 1) necrotizing or cavitary infiltrates or 2) empyema.

Infectious period

The duration of shedding with novel influenza A (h1N1) virus is unknown. Therefore, until data are available, the estimated duration of viral shedding is based upon seasonal influenza virus infection.. Infected persons are assumed to be shedding virus from one

day prior to illness onset until resolution of symptoms. In general, persons with novel influenza A (H1N1) virus infection should be considered potentially infectious from one day before to 7 days following illness onset. Children, especially younger children, might be infectious for up to 10 days.

Infection control measures

Please view the guidance on infection control in healthcare settings available at <http://health.state.tn.us/H1N1.htm>. As of May 5, 2009, in view of mounting evidence, that the current wave of the H1N1 influenza virus is behaving similarly to seasonal influenza, the Tennessee Department of Health (TDH) recommends that healthcare facilities should consider applying the following modifications to the CDC guideline (published May 4, 2009). These recommendations are similar to those recommended by the WHO and Health Canada, (e.g., http://www.who.int/csr/resources/publications/infection_control/en/index.html). All guidance from the TDH is interim and subject to change as additional information becomes available:

For all patients with a febrile respiratory illness (FRI) (i.e., not just suspect or confirmed cases of H1N1):

- Practice good hand hygiene (patient and staff)
- Practice good respiratory hygiene (patient and staff)
- Practice standard precautions (i.e., treat all body-fluids as potentially infectious, including stool; wear gown, gloves and eye-protection if risk of splash)
- Wear surgical mask if within 6 feet of a patient with a febrile respiratory illness if:
 - the patient is compliant (willing and able) with respiratory hygiene practices or
 - the patient has a weak or no cough (individuals who may have a weak cough are the frail elderly and pediatric patients).
- Wear a N-95 respirator (fit-tested) or PAPR; eye-protection (face-shield^(1, 2) or goggles); gown and gloves (all persons in the room):
 - IF conducting aerosol-generating medical procedures⁽³⁾ OR
 - WHEN the patient is coughing forcefully AND the patient is unable/unwilling to comply with respiratory hygiene (e.g., coughing patient who is unable or unwilling to wear a surgical mask)

Notes:

- (1) Face-shields are preferred over goggles because:
 - goggles may alter facial contours and impair the proper fit of N-95 respirators that were fit-tested without wearing goggles
 - face-shields are easier to clean than goggles
- (2) Face-shields should cover the eyes and preferably extend over the chin
- (3) Aerosol-generating procedures include: collection of clinical specimens, endotracheal intubation, suctioning (if not using a closed system), administration of nebulized medications, bronchoscopy, and resuscitation involving emergency

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intubation or cardiac pulmonary resuscitation. See additional CDC guidance below.

Antiviral chemoprophylaxis

View the guidance on [pre-exposure and post-exposure](#) chemoprophylaxis with antiviral agents for novel influenza A (H1N1) virus can be found at:

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