

Interim Guidance for Infection Control for Care of Patients with Confirmed or Suspected Novel Influenza A (H1N1) Virus Infection in a Healthcare Setting

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This document provides interim guidance for healthcare facilities (e.g., hospitals, long-term care and outpatient facilities, and other settings where healthcare is provided) and will be updated as needed.

***** Please see comments from the Tennessee Department of Health at the end of the CDC guidance*****

Background

To date, human cases of novel influenza A (H1N1) virus infection have been confirmed in residents of several U.S. states and Mexico (for the most up-to-date list please see the [H1N1 Flu website](#)). Investigations of these cases suggest that on-going human-to-human novel H1N1 virus is occurring. Illness signs and symptoms have consisted of fever and respiratory tract illness (cough, sore throat, runny nose), headache, muscle aches, Some cases have had vomiting and diarrhea. Cases of severe respiratory disease, including fatal outcomes, have been reported.

The novel H1N1 virus that has infected humans in the U.S. and Mexico is a novel influenza A virus that has not previously been identified in North America. This virus is resistant to the antiviral medications amantadine and rimantadine but is sensitive to oseltamivir and zanamivir.

Implementation of Respiratory Hygiene/Cough Etiquette

To prevent the transmission of **all** respiratory infections in healthcare settings, including novel H1N1, respiratory hygiene/cough etiquette infection control measures (see

[Respiratory Hygiene/Cough Etiquette in Healthcare Settings](#)) should be implemented at the first point of contact with a potentially infected person. They should be incorporated into infection control practices as one component of Standard Precautions.

Healthcare facilities should establish mechanisms to screen patients for signs and symptoms of febrile respiratory illness at any point of entry to the facility. Provisions should be made to allow for prompt isolation and assessment of symptomatic patients.

Implementation of Facility Contingency Plans

The current situation with novel H1N1 flu in the United States is evolving quickly. Staff in healthcare settings should monitor the [H1N1 Flu](#) website and state and local health department websites for the latest information. Healthcare facilities should be reviewing and making plans to implement their facility contingency response and/or pandemic response plans. This should include making plans for managing increasing patient volume and potential staffing limitations.

Interim Infection Control Recommendations

If the patient is presenting in a community where novel H1N1 transmission is occurring (based upon information provided by state and local health departments), these infection control recommendations should apply to all patients with febrile respiratory illness (defined as fever [greater than 37.8° C] plus one or more of the following: rhinorrhea or nasal congestion; sore throat; cough).

If the patient is presenting in a community without novel H1N1 transmission, these infection control recommendations should apply to those patients with febrile respiratory illness AND:

- close contact with a person who is a confirmed, probable, or suspected case of novel H1N1 virus infection, within the past 7 days OR
- travel to a community either within the United States or internationally where there are one or more confirmed novel H1N1 cases within 7 days

As the situation evolves, the ability to use epidemiologic links to identify potentially infectious patients may be lost and these recommendations may need to be applied to all patients with febrile respiratory illness. This situation will be monitored, and these guidelines will be updated as needed.

Infection Control of Ill Persons in a Healthcare Setting

Screening of patients presenting to medical facilities should be done in a location with negative pressure air handling whenever feasible.

Patient placement and transport

Any patients who have a confirmed, probable, or suspected case of novel H1N1 and present for care at a healthcare facilities should be placed directly into individual rooms and the door should be kept closed. Healthcare personnel who interact with the patients should follow the infection control guidance in this document. For the purposes of this guidance, healthcare personnel are defined as persons, including employees, students, contractors, attending clinicians, and volunteers, whose activities involve contact with patients in a healthcare or laboratory setting.

For procedures that are likely to generate aerosols (e.g., bronchoscopy, **elective intubation**, suctioning, administering nebulized medications), **an airborne infection isolation room (AIIR) with negative pressure air handling with 6 to 12 air changes per hour can be used.** Air can be exhausted directly outside or be recirculated after filtration by a high efficiency particulate air (HEPA) filter. Facilities should monitor and document the proper negative-pressure function of AIIRs, including those in operating rooms, intensive care units, emergency departments, and procedure rooms.

Procedures for transport of patients in isolation precautions should be followed. Facilities should also ensure that plans are in place to communicate information about suspected cases that are transferred to other departments in the facility (e.g., radiology, laboratory) and other facilities. The *ill person should wear a surgical mask to contain secretions when outside of the patient room* and should be encouraged to perform hand hygiene frequently and follow [respiratory hygiene/cough etiquette practices](#).

Limitation of healthcare personnel entering the isolation room

Healthcare personnel entering the room of a patient in isolation should be limited to those performing direct patient care.

Isolation precautions

All healthcare personnel who enter the patient's room should take *standard and contact precautions plus eye protection should be used* for all patient care activities for patients being evaluated or in isolation for novel H1N1 . Maintain adherence to *hand hygiene by washing with soap and water or using alcohol-based hand sanitizer* immediately after removing gloves and other equipment and after any contact with respiratory secretions. Nonsterile gloves and gowns along with eye protection should be donned when entering a patient's room. (See [Personal Protective Equipment \(PPE\) in Healthcare Settings](#))

Respiratory protection: All healthcare personnel who enter the rooms of patients in isolation with confirmed, suspected, or probable novel H1N1 influenza should wear a fit-tested disposable N95 respirator or better. Respiratory protection should be donned when entering a patient's room.

Note that this recommendation differs from current infection control guidance for seasonal influenza, which recommends that healthcare personnel wear surgical masks for patient care. The rationale for the use of respiratory protection is that a more conservative approach is needed until more is known about the specific transmission characteristics of this new virus. This recommendation is also outlined in the October 2006 [“Interim Guidance on Planning for the Use of Surgical Masks and Respirators in Healthcare Settings during an Influenza Pandemic”](#).

Management of visitors

Limit visitors for patients in isolation for novel H1N1 infection to persons who are necessary for the patient's emotional well-being and care. Visitors who have been in contact with the patient before and during hospitalization are a possible source of novel H1N1. Therefore, schedule and control visits to allow for appropriate screening for acute respiratory illness before entering the hospital and appropriate instruction on use of personal protective equipment and other precautions (e.g., hand hygiene, limiting surfaces touched) while in the patient's room. Visitors should be instructed to limit their movement within the facility.

Visitors may be offered a gown, gloves, eye protection, and respiratory protection (i.e., N95 respirator) and should be instructed by healthcare personnel on their use before entering the patient's room.

Duration of precautions

Isolation precautions should be continued for 7 days from symptom onset or until the resolution of symptoms, whichever is longer.

Persons with novel H1N1 virus infection should be considered potentially contagious from one day before to 7 days following illness onset. Persons who continue to be ill longer than 7 days after illness onset should be considered potentially contagious until symptoms have resolved. Children, especially younger children, might be contagious for longer periods.

Surveillance of healthcare personnel

In communities where novel H1N1 virus transmission is occurring, healthcare personnel should be monitored daily for signs and symptoms of febrile respiratory illness. Healthcare personnel who develop these symptoms should be instructed not to report to work, or if at work, should cease patient care activities and notify their supervisor and infection control personnel.

In communities without novel H1N1 virus transmission, healthcare personnel working in areas of a facility where there are patients being assessed or isolated for novel H1N1 infection should be monitored daily for signs and symptoms of febrile respiratory infection. This would include healthcare personnel exposed to patients in an outpatient

setting or the emergency department. Healthcare personnel who develop these symptoms should be instructed not to report to work, or if at work, should cease patient care activities and notify their supervisor and infection control personnel.

Healthcare personnel who do not have a febrile respiratory illness may continue to work. Asymptomatic healthcare personnel who have had an unprotected exposure to novel H1N1 also may continue to work if they are started on antiviral prophylaxis. ([See Interim Guidance on Antiviral Recommendations for Patients with Novel Influenza A \(H1N1\) Virus Infection and Their Close Contacts](#)).

Management of ill healthcare personnel

Healthcare personnel should not report to work if they have a febrile respiratory illness. In communities where novel H1N1 transmission is occurring, healthcare personnel who develop a febrile respiratory illness should be excluded from work for 7 days or until symptoms have resolved, whichever is longer.

In communities without novel H1N1 transmission, healthcare personnel who develop a febrile respiratory illness and have been working in areas of the hospital where swine influenza patients are present, should be excluded from work for 7 days or until symptoms have resolved, whichever is longer.

In communities where novel H1N1 transmission is not occurring, healthcare personnel who develop febrile respiratory illness and have not been in areas of the facility where swine influenza patients are present should follow facility guidelines on returning to work.

Stewardship of personal protective equipment and antivirals

Facilities should implement plans to ensure appropriate allocation of personal protective equipment, including N95 respirators, and antiviral medications.

Environmental infection control

Routine cleaning and disinfection strategies used during influenza seasons can be applied to the environmental management of swine influenza. Management of laundry, utensils and medical waste should also be performed in accordance with procedures followed for seasonal influenza. (See [Guideline for Environmental Infection Control in Health-Care Facilities, 2003](#)).

Facility access control

Facilities should have signage at entry points instructing patients and visitors about hospital policies, including the need to notify staff immediately if they have signs and

symptoms of febrile respiratory illness. Facilities in communities where swine influenza transmission is occurring should limit points of entry to the facility.

Administration of the seasonal influenza vaccine

It is not anticipated that the seasonal influenza vaccine will provide protection against the novel H1N1 viruses. However, in some parts of the country, seasonal influenza viruses are still circulating. Influenza vaccination is effective against these seasonal viruses and should continue to be given to unvaccinated patients in areas where seasonal influenza cases are still occurring.

*Respirator use should be in the context of a complete respiratory protection program in accordance with Occupational Safety and Health Administration (OSHA) regulations. Staff should be medically cleared, fit-tested, and trained for respirator use, including: proper fit-testing and use of respirators, safe removal and disposal, and medical contraindications to respirator use. (See [Respiratory protection and fit test procedures](#)).

Additional information on N95 respirators and other types of respirators:

- [Respirator Fact Sheet: What You Should Know in Deciding Whether to Buy Escape Hoods, Gas Masks, or Other Respirators for Preparedness at Home and Work,](#)
- [US FDA/CDRH: Personal Protective Equipment - Masks and N95 Respirators.](#)

NOTE by the Tennessee Department of Health (TDH) (updated 9/3/2009):

CDC is expected to review and update the above guidance on or about October 1, 2009

In the interim, the Tennessee Department of Health (TDH) recommends that healthcare facilities should consider applying the following modifications to the current CDC guideline. 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), as well as the recommendations by APIC and SHEA, and the interim recommendations of HICPAC to the CDC.

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: endotracheal intubation, suctioning (if not using a closed system), bronchoscopy, and resuscitation involving emergency intubation or cardiac pulmonary resuscitation.

September 3, 2009 Comments by the TDH on the IOM report and PPE.

The IOM report was released Sept.3, 2009 on personal protective equipment (PPE) for novel H1N1 for healthcare workers: http://www.nap.edu/catalog.php?record_id=12748. The report did not take into account worker compliance or logistical considerations (e.g., limited supply). It recommends use of N-95 respirators for all in close contact with patient with ILI or undiagnosed febrile respiratory illness (not just aerosol-generating procedures). CDC will review the IOM report, HICPAC recommendations, professional societies' position statements etc... and make its recommendations soon (perhaps as early as next week, no later than Oct 1). The details of a randomized controlled clinical trial (RCT) conducted in China (1,936 HCWs) comparing the use of N-95s to surgical masks to controls (worn for the whole shift for 4 weeks) with clinical and laboratory outcomes (PCR for influenza and other respiratory pathogens) will be presented at ICAAC (Sept 12-15). This RCT suggests that surgical masks have no efficacy, but that N-95 respirators had 75% efficacy against laboratory confirmed influenza. The results of that RCT conflict with the results of another RCT conducted in Canada (446 nurses), that suggests that surgical masks were not inferior to N-95 respirators. We are not familiar with the details of the study design of that RCT, and are not sure when it will be presented/published, but are attempting to get additional info. from the principal investigator. In order to limit confusion among HCWs the TDH is awaiting further details on these 2 RCTs as well as the soon anticipated revised CDC guidance before we revise our guidance to hospitals. The most current IC guidance is posted on THAN. This is not a legally binding recommendation.