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## Outbreaks of 2009 Pandemic Influenza A (H1N1) Among Long-Term--Care Facility Residents --- Three States, 2009

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Hospitalization and death from seasonal influenza are more common among older adults and in long-term--care facilities (LTCFs) (1). Early data from the 2009 pandemic influenza A (H1N1) outbreak indicated that attack rates among persons aged  $\geq 65$  years were lower than in other age groups, and anti-influenza A antibodies that cross-react with 2009 H1N1 could be detected in up to one third of healthy adults aged  $>60$  years (2). Based on these early data and anticipation of limited initial supplies of 2009 H1N1 vaccine, the Advisory Committee on Immunization Practices (ACIP) identified priority groups for vaccination (3), which did not include persons aged  $\geq 65$  years who did not have higher risk for influenza or its complications (3). During October and November 2009, CDC received reports of 2009 H1N1 outbreaks in LTCFs in Colorado, Maine, and New York. This report summarizes the three outbreaks, which involved facilities primarily housing older patients. These outbreaks illustrate that, despite the lower risk for infection with 2009 H1N1 among persons aged  $\geq 65$  years compared with seasonal influenza, 2009 H1N1 outbreaks still can occur in LTCFs. These outbreaks also underscore the importance of respiratory illness surveillance and recommended infection-control procedures in LTCFs. All health-care personnel should be vaccinated against seasonal influenza and 2009 H1N1. LTCF residents should receive seasonal influenza vaccination, and should be vaccinated against 2009 H1N1 after assessment of vaccine availability at the local level indicates that demand for vaccine among younger age groups is being met (3).

### **Outbreak Reports**

**Colorado.** Beginning on October 14, 2009, the Colorado Department of Public Health and Environment assisted with the control of an outbreak of influenza-like illness (ILI)\* in a 39-bed LTCF. During October 12--14, 2009, 11 residents (age range: 76--106 years) developed ILI (resident attack rate = 28%). Among the 11 residents, four tested positive by rapid influenza diagnostic test (RIDT), and three of these were positive by real-time reverse transcription--polymerase chain reaction (rRT-PCR) for 2009 H1N1. All of the ill residents lived in the same care unit. One of the 11 residents was hospitalized because of his ILI symptoms; no deaths occurred. Among 25 staff members at the facility, 10 reported experiencing ILI (staff attack rate = 40%); one worked while ill on October 10, which was 2 days before the onset of ILI in residents. Interventions implemented by the facility on October 14 included use of droplet precautions (4) and oseltamivir treatment for all residents with ILI, oseltamivir prophylaxis for all other residents and all staff members, restriction of exposed residents to their care unit, ill visitor restriction, and vaccination of staff members with 2009 H1N1 vaccine. Seasonal influenza vaccine had been offered to all residents and staff members before the outbreak, but 2009 H1N1 vaccine was not available at that time. No new ILI cases occurred after October 14.

**Maine.** On November 12, 2009, the Maine Center for Disease Control and Prevention conducted an investigation of a 2009 H1N1--related death in a patient from a 125-bed LTCF with 175 staff

members. The patient was an ambulatory man aged 72 years who became ill on November 9, 2009, and died on November 10 of respiratory failure; 2009 H1N1 infection was confirmed by rRT-PCR. Absenteeism among health-care personnel at the facility had increased from a baseline average of two employee absences per day to seven employee absences per day in the week before the patient's illness, and to 11 employee absences per day the week of the patient's illness onset; eight staff members reported ILI symptoms (staff attack rate = 5%). No residents or staff members had been vaccinated for 2009 H1N1 or seasonal influenza. Because of concerns that more influenza infections might develop among residents, on November 13 the facility was closed to new admissions and visitors. Hand hygiene and cough etiquette were reinforced, droplet precautions were instituted for the care of infected residents, ill staff members were excluded from work, resident movement among the three wings of the facility was restricted, and oseltamivir prophylaxis was offered to all residents and staff members. All 125 residents and 159 of 175 staff members (91%) accepted the 2-week prophylaxis regimen. Six other residents (aged 72--89 years) developed ILI and were tested during November 13--17 (resident attack rate = 6%); two of these residents tested positive for 2009 H1N1 infection by rRT-PCR. Vaccination for 2009 H1N1 was not administered. No additional persons with ILI were identified after November 17.

New York. Starting on October 28, 2009, the New York State Department of Health (NYSDOH) assisted a 368-bed LTCF that had an outbreak of ILI among residents and staff members. From October 26 through November 6, a total of 41 of 368 residents (resident attack rate = 11%) and 135 of 615 staff members (staff attack rate = 22%) developed ILI. The first resident became ill on October 27. Ill residents were aged 66--96 years; none were hospitalized, and none died. A phlebotomist with onset of ILI on October 26 had worked on that day, drawing blood from 39 residents on all nine units in the facility. A nasopharyngeal swab collected from the phlebotomist tested positive for influenza A by RIDT and was later confirmed by rRT-PCR to be 2009 H1N1. Nasopharyngeal swabs were collected from six ill residents; one tested positive for 2009 H1N1 by rRT-PCR, and one tested positive for influenza A by culture.

Beginning on October 26, oseltamivir treatment was prescribed for all ill residents, and oseltamivir prophylaxis was offered to all unaffected residents and staff members. Enhanced surveillance for ILI was implemented, including contacting all absent employees to identify the reason for their absence. Staff members and visitors received education on standard precautions and droplet precautions and were excluded from the facility if ill. Children aged <12 years were restricted from visiting, and hand hygiene stations were placed outside of each unit. Ill residents were placed on droplet precautions. All residents and approximately 68% of staff members had been vaccinated for seasonal influenza at the time of the outbreak. No additional cases were reported after November 6. The facility offered 2009 H1N1 vaccine to all staff members on November 9.

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## Editorial Note

This report describes three outbreaks of 2009 H1N1 infection in LTCFs. Anecdotal reports to CDC have indicated that these are not the only outbreaks of 2009 H1N1 in LTCFs that have occurred since the beginning of the pandemic; however, data on the incidence of influenza in LTCFs are not

collected systematically at the national level. When the outbreak in Colorado was reported to CDC on October 21, 2009, CDC and the state of Colorado informally solicited reports of other outbreaks in LTCFs during a weekly Council of State and Territorial Epidemiologists teleconference. New York and Maine responded with information about similar outbreaks described in this report.

Several states conduct regular surveillance of outbreaks (including influenza) in LTCFs, and this information is shared with CDC. For example, by October 30, 2009, New York had identified a large number of 2009 H1N1 outbreaks in such facilities. The NYSDOH has required reporting of influenza and respiratory illness<sup>†</sup> from LTCFs since the late 1990s. In New York, from September 1 through December 15, 2009, reports of LTCFs with laboratory-confirmed influenza outbreaks increased by approximately tenfold to 50 (peak week was 17), compared with the same period during the 4 previous years (average: 5; range: 4--6 outbreaks). This increase early in the influenza season might reflect high levels of 2009 H1N1 circulating earlier in 2009 compared with past seasons when influenza activity typically peaked in January, February, or March (the average number of outbreaks for the peak week during the past three seasons has been 24). CDC has not solicited further LTCF outbreak reports since November 2009 and has not received additional reports since that time.

Seasonal influenza attack rates among residents of LTCFs have varied widely. The rates have ranged from 20% to 30% in more recent studies, but were as high as 70% in earlier studies (4). The 2009 H1N1 influenza outbreaks described in this report generally had lower resident attack rates (6% to 28%) and limited numbers of severe cases; however, because this was a convenience sample of facilities with outbreaks of 2009 H1N1 influenza where antiviral medications were started early in the outbreak, these examples might not be representative of other 2009 H1N1 influenza outbreaks.

All three outbreaks ended after initiation or reinforcement of recommended infection control practices (6,7) (Box). Although the extent to which measures used in these three outbreaks stopped transmission is uncertain, previous studies have found that use of antivirals with other control measures have effectively halted similar outbreaks. Likewise, the way in which influenza virus was introduced into these LTCFs is unknown. Influenza virus often is introduced into LTCFs via ill health-care personnel or visitors. In two of these outbreaks, ill health-care personnel worked while ill and might have served as a source of infection for at least some of the symptomatic residents. The possibility that transmission occurred between health-care personnel and patients underscores the importance of excluding ill health-care personnel from work and providing immunization with 2009 H1N1 vaccine to all LTCF staff members.

On April 26, 2009 (updated October 14, 2009), CDC released guidelines for general 2009 H1N1 infection-control recommendations for all health-care facilities, including LTCFs<sup>§</sup>. LTCFs should have surveillance in place to recognize respiratory illness outbreaks early, mechanisms to implement control measures, and the ability to collect and test respiratory specimens for influenza (7).

Vaccination of health-care personnel has been associated with lower rates of health-care--related seasonal influenza (8,9). Immunization of health-care personnel in LTCFs also has been linked to significant reductions in all-cause patient mortality (from 17% to 10%) and ILI (8). Health-care personnel in LTCFs are a priority group for 2009 H1N1 vaccination.

The use of antivirals for treatment and chemoprophylaxis of influenza in LTCFs has been recommended for seasonal influenza (6). In general, antiviral chemoprophylaxis for influenza is recommended for at least 2 weeks, and as long as 1 week after the last resident case has occurred (6). Oseltamivir or zanamivir also should be used for chemoprophylaxis during recognized outbreaks of 2009 H1N1 in LTCFs. In addition, LTCF residents who develop an illness suspected to be 2009 H1N1 should receive empiric treatment with either oseltamivir or zanamivir (10). Rapid influenza

diagnostic testing should not be used to exclude the diagnosis of influenza because these tests have low sensitivity, and negative results on testing of persons with ILI should be followed up with rRT-PCR testing (7,10).

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\* In all three outbreaks, ILI was defined as presence of fever with cough or sore throat.

† A sudden increase of acute febrile respiratory illness cases over the normal background rate or when any resident tests positive for influenza. One case of confirmed influenza by any testing method in a long-term--care facility resident is considered an outbreak.

§ Available at [http://www.cdc.gov/h1n1flu/guidelines\\_infection\\_control.htm](http://www.cdc.gov/h1n1flu/guidelines_infection_control.htm).

What is already known on this topic?

Seasonal influenza is a recognized cause of morbidity and mortality in long-term--care facilities (LTCFs).

What is added by this report?

Outbreaks of 2009 pandemic influenza A (H1N1) in LTCFs in three states during October and November 2009 demonstrate that such outbreaks can occur; attack rates among residents varied between 6% and 28%.

What are the implications for public health practice?

All health-care personnel, including those who work in LTCFs, should be vaccinated against seasonal and 2009 H1N1 influenza. As vaccination efforts are expanded to include adults aged  $\geq 65$  years, LTCF residents should be vaccinated against 2009 H1N1 influenza in addition to seasonal influenza. LTCFs should monitor for influenza-like illness, and have plans in place for testing and treating of patients and staff members in the event of an outbreak.

### **BOX. Influenza prevention and control measures for long-term--care facilities**

- Vaccinate health-care personnel against seasonal influenza and 2009 pandemic influenza A (H1N1). Vaccinate residents of long-term--care facilities for seasonal influenza and offer 2009 H1N1 as this vaccine becomes widely available.
- Instruct all residents and staff members to use respiratory hygiene and cough etiquette.
- Restrict ill visitors and ill health-care personnel from the facility.
- Continue active surveillance and use influenza testing for new cases of acute respiratory illness and influenza-like illness.
- To the extent possible, segregate ill residents from unaffected residents and maintain appropriate levels of isolation.
- When influenza is detected in the facility, administer influenza antiviral treatment to ill residents and influenza antiviral prophylaxis to unaffected residents. Unaffected health-care personnel should be offered influenza antiviral prophylaxis.

SOURCES: CDC. Interim guidance on infection control measures for 2009 H1N1 influenza in healthcare settings, including protection of healthcare personnel; October 14, 2009. Available at [http://www.cdc.gov/h1n1flu/guidelines\\_infection\\_control.htm](http://www.cdc.gov/h1n1flu/guidelines_infection_control.htm). Carman WF, Elder AG, Wallace LA, et al. Effects of influenza vaccination of health-care workers on mortality of elderly people in long-term care: a randomised controlled trial. *Lancet* 2000;355:93--7.

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