A novel influenza A partly of virus of swine origin (2009 H1N1) emerged this spring, resulting in an influenza pandemic. This pandemic is anticipated to continue into the next influenza season. Given that the 2009 H1N1 and seasonal influenza A appear to be somewhat different in the human populations affected and that two influenza vaccines will be recommended this fall, those who manage long-term care facilities and treat patients in them will be faced with many uncertainties as they approach the 2009/10 influenza season. Ten specific suggestions are offered to those responsible for the care of patients in long-term care facilities regarding the upcoming influenza season. These practical suggestions are the clinical opinions of the authors and do not represent official recommendations of the American Geriatrics Society or any agency. J Am Geriatr Soc 2009.

Key words: emergency preparedness; influenza; long-term care; nursing home; pandemic

Influenza presents special challenges for long-term care facilities (LTCFs). Congregate care settings facilitate influenza transmission. Additionally, influenza is more difficult to diagnose in older patients and is associated with significant mortality in this population. The emergence of a novel H1N1 influenza A virus partly of swine origin in Mexico in March 2009 has progressed to an ongoing pandemic. The terminology regarding this virus has been confusing, because the pandemic strain and previously circulating seasonal strains of influenza A have both been of the H1N1 type. This article refers to the new pandemic H1N1 strain as “2009 H1N1” and older circulating seasonal influenza H1N1 strains as “seasonal H1N1” or “seasonal influenza A.”

Our understanding of 2009 H1N1 illness in humans is still evolving, but it appears that the epidemiology of novel H1N1 differs from seasonal influenza A. The 2009 H1N1 pandemic is anticipated to continue and worsen into the next seasonal influenza season. Given that the viruses appear to be somewhat different in the way that they cause disease in human populations and that two influenza vaccines will be recommended this fall, those who manage LTCFs and treat patients in them are faced with many uncertainties as they approach the 2009/10 influenza season. In anticipation of the special challenges arising this fall, recent literature and guidance from official agencies were reviewed, and recommendations were developed to assist physicians and directors of LTCFs in their planning efforts with regard to influenza this fall (Table 1). These are practical suggestions that represent the clinical opinions of the authors and do not constitute official recommendations of the American Geriatrics Society or any agency.

NOVEL H1N1 AND OLDER PERSONS

A novel H1N1 influenza virus (hereafter referred as 2009 H1N1) of part swine origin was identified in California school children in April 2009. Mexico City experienced a major epidemic a few weeks later that resulted in more than 100 deaths and in cancellation of all public events for 18 days. As of July 22, 2009, more than 134,000 cases have been confirmed worldwide. This 2009 (H1N1) virus resulted from a reassortment of influenza genes of human, avian, and swine origin.
Table 1. Recommended Action Items for Long-Term Care Facilities in Preparing for the Upcoming Influenza Season

1. Designate an Influenza Preparedness Officer for the facility.
2. Renew or establish a relationship with your local health department and department of emergency management.
3. Anticipate the need for a dual vaccination program this fall for residents and staff.
4. Offer free vaccination to your staff.
5. Implement now a policy to monitor and restrict visitors and staff with influenza-like symptoms.
6. Change your facility's surveillance for influenza-like illness in residents and staff.
7. Plan for high rates of staff absenteeism.
8. Discuss access to antivirals with your local health department.
9. Review your isolation precautions procedures and the supplies and systems needed.
10. Review and revise (or develop) a written pandemic influenza plan for your facility.

Thus far, it appears that there are important epidemiological differences between 2009 H1N1 and seasonal influenza A. The 2009 H1N1 appears to cause gastrointestinal symptoms more frequently than seasonal influenza A. The fact that 2009 H1N1 has been reported more frequently in children, and nausea and vomiting are more common in children than in adults with influenza may confound this observation. The 2009 H1N1 appears to affect older persons less frequently than younger persons. During the 2009 H1N1 epidemic in Mexico, 87% of deaths and 76% of cases of severe pneumonia occurred in persons younger than 60. This is in contrast to epidemics of seasonal influenza A, which result in excess deaths and cases of severe pneumonia in older persons. This observation has led the Centers for Disease Control and Prevention (CDC) to prioritize 2009 H1N1 vaccine to younger persons. Obesity may be a risk factor for hospitalization and death from 2009 H1N1, but it is unclear whether this is related to restrictive lung disease or other comorbidities in obese patients. A number of 2009 H1N1 outbreaks have been reported in congregate settings such as schools and summer camps. At the time of this writing, the authors were not aware of any published reports of outbreaks in LTCFs.

Official interim guidelines from the CDC recommend antiviral treatment of hospitalized patients with 2009 H1N1 and H1N1-infected patients at highest risk of complications from seasonal influenza. This includes children younger than 2, pregnant women, adults aged 65 and older, and persons with chronic heart or lung disease. In general, 2009 H1N1 has been resistant to amantadine and rimantadine but sensitive to the neuraminidase inhibitors, and thus neuraminidase inhibitors (oseltamivir or zanamivir) are the preferred agents. Rare oseltamivir resistance to 2009 H1N1 has recently been reported. The efficacy of antiviral agents against 2009 H1N1 has been established in vitro and using genetic sequencing as well as limited clinical experiences but not yet in clinical trials.

Older patients generally tolerate oseltamivir well. Some patients have nausea or vomiting, but this is less common if oseltamivir is given with food. Zanamivir is given by inhalation, which is difficult to administer to cognitively impaired patients. Additionally, zanamivir may exacerbate bronchospasm in patients with asthma or obstructive lung disease and is not recommended for patients with these disorders. Recommended dosing of antivirals for prophylaxis and treatment of influenza in older persons is given in Table 2.

A vaccine against novel H1N1 has been developed and tested in humans. The efficacy of the vaccine is now being tested in clinical trials at the time of this writing. It is anticipated that the CDC and other advisory groups will recommend universal vaccination with priority for certain high-risk groups. Based on supplies, allocation will prioritize pregnant women, household contacts and caregivers of children younger than 6 months old, healthcare workers, persons aged 6 months to 24 years, and adults aged 25 to 64 with certain chronic medical conditions.

In light of the uncertainties that face LTCFs with regard to influenza this year, the following 10 specific recommendations are offered. Implementing some of these suggestions will take several weeks; therefore, it is recommended that LTCFs form an operational group to undertake appropriate planning and action over the summer and early fall. Ideally, this operational group would include representatives from various areas of responsibility in the facility, including administration, human resources, infection control, medical directors, nursing, pharmacy, and purchasing.

RECOMMENDATIONS FOR LTCFS

1. Designate an Influenza Preparedness Officer for the facility. This would probably be the infection-control practitioner in facilities that have such a staff position. In smaller facilities that lack an infection control practitioner, this would best be a clinician, such as the director of nursing. The officer should serve as liaison to local emergency management and public health departments, area hospitals, and other outside agencies. The officer should monitor influenza surveillance within the facility, community influenza activity, bed availability at local hospitals, national treatment recommendations, staff absenteeism, and levels of critical care.

Table 2. Recommended Dosages of Commonly Prescribed Antiviral Drugs for Treatment and Prophylaxis of Novel H1N1 in Older Adults

<table>
<thead>
<tr>
<th>Drug</th>
<th>Treatment</th>
<th>Prophylaxis</th>
<th>Adjustments in Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oseltamivir</td>
<td>75 mg twice daily</td>
<td>75 mg daily</td>
<td>Reduce dose if creatinine clearance &lt; 10 mL/min</td>
</tr>
<tr>
<td>Zanamivir</td>
<td>10 mg (2 inhalations) twice daily</td>
<td>10 mg (2 inhalations) once daily</td>
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</table>

Recommended drugs for seasonal influenza may be different.
supplies in the facility. The officer should be a member of the operational group and report regularly to it. There should be a designated backup officer. Monitoring the recommendations of the CDC and state and local health departments can be challenging. This spring, the CDC and state health departments developed and disseminated many interim guidelines (sometimes several per day). These were disseminated rapidly, generally by posting on the agency’s official website. To stay advised of such new guidance, the Influenza Preparedness Officer should survey the CDC H1N1 flu page (http://www.cdc.gov/h1n1flu/) and the appropriate Web site of their state health department daily. Additionally, the officer should subscribe electronically to the International Society of Infectious Disease free listserv (http://www.promedmail.org) for frequent updates.

(2) Renew or establish a relationship with your local health department and department of emergency management. The CDC’s pandemic influenza plan assigns extremely important roles to local and state health departments, including vaccine and antiviral distribution, surveillance, coordination of local healthcare response, diagnostic testing, and coordination of surge capacity for healthcare labor. In the event of great demand, influenza testing and other resources may be available only from local or state health departments. All LTCFs should contact or meet with their local departments of emergency management and public health to discuss the specifics of the coordinated community response, including mechanisms for communications, diagnostic testing, isolation procedures, and prophylaxis and treatment protocols for their community. LTCF should review how they integrate into their community’s pandemic influenza plan. If 2009 H1N1 indeed affects older persons less than younger persons, LTCFs may be called on to provide beds for overflow of hospitalized patients. In this regard, LTCFs should review processes to pre-identify which residents can be rapidly discharged to the care of family members or other caregivers and to quickly provide pertinent medical records and current medication lists.

(3) Anticipate the need for a dual vaccination program this fall for residents and staff. Vaccination for seasonal influenza A (one dose) and 2009 H1N1 (one dose) will most likely be recommended. At this time, there is speculation that persons aged 65 and older may only need one dose of 2009 H1N1 because of residual immunity to H1N1 strains that circulated before 1957. It is anticipated that the Food and Drug Administration will allow seasonal influenza A and 2009 H1N1 vaccinations to be given at the same time, although it is likely that the availability of the two vaccines will not be simultaneous for much of the country. The current CDC recommendation to state and local health departments is that, if vaccine quantities are limited, persons who should receive the vaccine before others include pregnant women, household contacts and caregivers of children younger than 6 months, healthcare workers, children aged 6 months to 4 years, and children aged 5 to 18 with chronic medical conditions. Therefore, some LTCF residents may not receive the 2009 H1N1 vaccine until later in the season. LTCFs should review their influenza vaccination system and anticipate the need to administer two different vaccines. Facilities should anticipate that staff and residents may receive the 2009 H1N1 vaccination at different times. Facilities should also begin seasonal influenza A vaccination as soon as vaccine is available, even if in late August, because immunity from vaccination does not wane over the season. Currently, signed consent for seasonal vaccination in LTCFs is not required, but LTCFs should be prepared to obtain signed consent for vaccine against 2009 H1N1. LTCF should educate staff, residents, and families about the differences between the two influenza vaccines.

(4) Offer free vaccination to staff. High vaccination rates among staff have been shown to decrease the risk of epidemics in LTCFs, and some states require vaccination of LTCF staff. Many LTCF staff are at risk for exposure to young children and are thus at above-average risk of acquiring influenza. Influenza vaccination rates in healthcare workers are disappointingly low (averaging ~ 40% in many studies). Successful strategies to increase vaccination rates in healthcare workers include providing education about benefits and adverse reactions and providing free on-site vaccine to all employees. It is likely that the 2009 H1N1 vaccine will be made available at no cost through local and state health departments. Therefore, the cost of 2009 H1N1 vaccination will probably be low for LTCFs who coordinate their vaccination efforts through the health department.

(5) Implement now a policy to monitor and restrict visitors and staff with influenza-like symptoms. The CDC and others recommend exclusion from LTCFs and staff with influenza. Thus, surveillance for symptoms of influenza in visitors and staff to LTCFs is recommended during influenza season. LTCFs should implement such a policy now and not wait until influenza season. LTCFs should post signage and train staff to recognize and report these symptoms in visitors and fellow staff members. Vomiting and diarrhea should be included as monitored symptoms unless official guidance recommends that surveillance is needed only for respiratory symptoms.

(6) Change your facility’s surveillance for influenza-like illness in residents and staff. Current guidelines recommend surveillance of LTCF residents for fever and cough and testing for influenza when more than one resident has these symptoms within a 72-hour period. Surveillance should be expanded to include residents or staff with fever and cough OR fever and vomiting OR fever and diarrhea and that testing for influenza be conducted when even one resident has any of these symptoms. Commercial rapid influenza antigen test kits can detect the presence of 2009 H1N1, but sensitivity is low (40–69%), and these kits cannot distinguish between 2009 H1N1 and seasonal influenza A. LTCFs should discuss testing for 2009 H1N1 with their local health departments and ascertain ahead of time how specimens are to be submitted for 2009 H1N1 testing.

(7) Plan for high rates of staff absenteeism. The current understanding of 2009 H1N1 is that almost everyone is susceptible and that attack rates for symptomatic dis-
Discuss access to antivirals with your local health department, and vaccinations. Training material for staff regarding signs and symptoms of influenza, droplet precautions, and isolation procedures. Influenza surveillance program and log for staff. Influenza surveillance program and log for residents. Visitation, and isolation procedures. Signage to exclude visitors and staff with influenza-like symptoms (see text).

Every two rooms, bottles of alcohol–gel hand sanitizer for every employee. Personal protective equipment for staff (several thousand surgical masks and gloves, several hundred gowns, wall-mounted alcohol–gel hand sanitizer for every two rooms, bottles of alcohol–gel hand sanitizer for very employee).

Review your isolation precautions procedures and the supplies and systems needed (Table 3). Influenza is transmitted through large mucous and respiratory droplets. With seasonal influenza, droplet precautions are recommended for care of patients with influenza in LTCFs. Current CDC infection control recommendations for 2009 H1N1 calls for airborne precautions. This means private rooms and N-95 particulate respirators. Many LTCFs do not have this capacity. A number of professional societies (the Infectious Diseases Society of America, the Association of Professionals in Infection Control and Epidemiology, and the Society of Healthcare Epidemiologists of America) have recently called for reversion to the World Health Organization (WHO) guidelines for pandemic influenza, which recommend droplet precautions with particulate (N-95) respirators only during aerosol-generating procedures such as bronchoscopy, suction, cardiopulmonary resuscitation, and intubation.

The health departments of California and New York have already adopted this recommendation. They recommend that LTCFs should not transfer ill patients to hospitals for airborne isolation but rather should use private rooms and droplet precautions in their facilities. It is likely that the CDC will adopt such a position later this fall. Droplet precautions are much easier for LTCFs to implement (Table 4). Given that multiple staff may enter the room of any patient (e.g., for clinical assessment, care, delivery of meals, cleaning) and that surgical masks are currently recommended for single use, every LTCF should purchase large supplies of surgical masks and alcohol–gel hand sanitizer. In the event of a supply shortage, LTCFs should contact their local health departments about the availability of such supplies from state caches. Because influenza is transmitted through droplets, the WHO guidelines allow cohorting of patients (placing two patients with influenza in the same room) when single rooms are not available. LTCFs should review their policies about room transfers in light of institutional need. Isolation procedures may raise concerns in family members. LTCFs should therefore prepare handouts in advance and draft letters, as well as media responses, that address questions and concerns about restricted visitation, isolation, cohorting, and other infection control measures. The WHO “Patient Care Checklist” (available at http://www.who.int/csr/resources/publications/swineflu/ah1n1_checklist.pdf) provides succinct guidance that is easily modified for staff training and facility signage. LTCFs should train staff and visitors in respiratory hygiene and evaluate the placement and use of alcohol–gel sanitizers. In addition, LTCFs may wish to provide securely mounted dispensers in patient care areas, table-top dispensers in staff areas, and pocket-size dispensers for staff use.

Table 3. Items for Long-Term Care Facilities to Develop or Acquire in Preparation for This Influenza Season

<table>
<thead>
<tr>
<th>Personal protective equipment for staff (several thousand surgical masks and gloves, several hundred gowns, wall-mounted alcohol–gel hand sanitizer for every two rooms, bottles of alcohol–gel hand sanitizer for very employee)</th>
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</thead>
<tbody>
<tr>
<td>Signage to exclude visitors and staff with influenza-like symptoms (see text)</td>
<td></td>
</tr>
<tr>
<td>Handouts and letters for visitors and families about vaccination, restricted visitation, and isolation procedures</td>
<td></td>
</tr>
<tr>
<td>Influenza surveillance program and log for residents</td>
<td></td>
</tr>
<tr>
<td>Influenza surveillance program and log for staff</td>
<td></td>
</tr>
<tr>
<td>Training material for staff regarding signs and symptoms of influenza, droplet precautions, and vaccination</td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Using Droplet Precautions When Entering a Patient Room or within 6 Feet of Persons with Proven or Suspected Influenza

| Hand washing immediately before entering the room |  |
| Use of a surgical mask upon entering the room |  |
| Use of gloves and gown if extensive contact with respiratory secretions is anticipated |  |
| Use of a face shield for close contact with coughing patients |  |
| Removal of mask and hand washing upon leaving the room |  |
(10) Review and revise (or develop) a written pandemic influenza plan for your facility. A recent survey in Nebraska and Michigan determined that only one-fourth of LTCFs had a specific pandemic response plan,34 and probably fewer have examined availability of supplies and developed written protocols.32 A written plan to address the contingencies of a pandemic will help to organize your facility’s planning efforts and improve community coordination for responding to what appears to be a likely and near event.33 In this regard, local departments of emergency management and public health can provide assistance and direct LTCFs to helpful resources.

CONCLUSION

LTCFs will face new challenges with influenza this season. The suggestions that are provided here will assist LTCFs to be better prepared to face these challenges and provide better care to their residents. Medical directors and administrators of LTCFs, especially those that are independently owned and those that operate in rural areas should review and consider these recommendations this summer.

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REFERENCES