Preparing Your Practice for the Fall Flu Season

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Awareness of the critical importance of infectious disease prevention is growing. The emergence of novel infectious organisms and resistant strains of illnesses such as tuberculosis and the difficulty of maintaining reliable treatment and prophylaxis regimens for them make the job of protecting patients and the public increasingly complex. The frenzy that surrounded the H1N1 pandemic this spring highlights the importance of communication, education and the encouragement of widespread use of preventive measures to thwart the spread of infection and disease.

As the fall flu season approaches, this issue of *infocus* takes a closer look at prevention through immunization for influenza and other communicable diseases. We also highlight some of the considerations that may be helpful for both office practices and healthcare organizations.

During the initial pandemic H1N1 outbreak in New York during the spring of 2009, many outpatient facilities and emergency departments experienced dramatic increases in the number of patients presenting for care. This type of surge in patient volume can have a substantial impact on the ability of a medical practice to continue operations and provide necessary services safely and effectively. All hospitals, outpatient clinics and private practices should develop strategies for the upcoming flu season in order to ensure that optimally safe and effective care can continue to be provided even in the event of a substantial surge in patient volume or an increase in employee absenteeism due to illness. The Centers for Disease Control and Prevention (CDC) has published guidance to assist medical offices and outpatient facilities in their planning efforts (www.cdc.gov/h1n1flu/10steps.htm).

Communication with patients and employees is a critical aspect of an influenza response plan. Medical office or ED visits are not necessary for most persons with mild influenza-like illness. Communicating this information to patients prior to and during influenza season and establishing an effective phone triage and screening process may help to limit the number of patients presenting for evaluation unnecessarily (see “Telephone Triage Protocol for Patients with Suspected Influenza Infection”). This may reduce the potential for exposure of other patients and personnel and minimize the overcrowding that can delay evaluation and treatment of those who do require medical care. Patients with mild illness who are not at high risk of influenza-related complications should be...
encouraged to stay home until at least 24 hours after their symptoms have resolved. Clinical judgment should be used to determine if persons with underlying conditions that place them at increased risk of complications need to be evaluated in-person or if they can be managed or treated at home. All patients should be instructed to call their physician or to seek medical attention immediately if they develop more severe symptoms, such as difficulty breathing, chest pain, dizziness or confusion.

Reducing the risk of unprotected exposure of patients and personnel to influenza is a critical component of any influenza response plan. This can be accomplished through the implementation of basic infection control practices:

- Screen all patients for symptoms of influenza (e.g., fever, cough, sore throat) at the time of arrival. Development of a simple screening tool that can be used by clinical or nonclinical personnel may be helpful in the successful implementation of a screening program.

- Provide surgical masks and tissues to all patients with symptoms of influenza and make hand hygiene products readily available to patients and staff (see “How-To’s for Clean Hands” and see “Hand Hygiene 101,” infocus, Vol. 7, Spring 2008).

- Separate patients with influenza-like illness from other patients. Strategies to do this may include use of separate waiting areas, designation of specific areas in the waiting room for suspected influenza patients, prioritizing symptomatic patients for relocation to an exam room, and leaving openings in the clinic schedule to accommodate walk-in patients with influenza-like illness in order to reduce waiting time (see “A Day in the Life of an ED”).

- Provide appropriate personal protective equipment for health care personnel to use when providing care to patients with confirmed or suspected influenza infection. The New York State Department of Health (NYSDOH) and New York City Department of Health and Mental Hygiene (NYCDOHMH) currently recommend the use of Standard Precautions and Droplet Precautions (i.e., wearing a surgical face mask) during routine care of patients with confirmed or suspected influenza. Additional precautions, including the use of fit-tested N-95 respirators and eye protection, are recommended when aerosol-generated procedures (e.g., intubation, bronchoscopy, and open suctioning) are being performed.

- Provide influenza vaccine to all health care personnel. (Influenza vaccination is discussed in more detail below.)

- Ensure that health care personnel who develop influenza-like illness do not come to work while ill and do not return to work until at least 24 hours after symptoms have resolved.

Finally, contingency plans should be developed that will allow for continued operation of the facility in the event of substantial personnel absenteeism. Such preparation may include cross-training of personnel so that they are able to perform tasks that are not normally part of their responsibilities, plans for alteration of work schedules, and use of phone answering services or systems to provide basic

What’s New with H1N1?

In June, the World Health Organization (WHO) declared the H1N1 influenza outbreak a global pandemic, the first flu pandemic in more than 40 years. Two months later, WHO reported that the confirmed flu cases had climbed to more than 162,000 worldwide, with 1,154 deaths.1 Closer to home, the Centers for Disease Control and Prevention (CDC) projects that as many as 40 percent of Americans could be infected or indirectly affected by H1N1 flu (such as those who stay home to care for sick family members). In early August, the CDC reported that the U.S. had seen more than 6,500 hospitalizations and 436 deaths resulting from H1N1.2 Because of this flu strain’s mild symptoms, the CDC estimates that a vast number of cases have gone unreported, putting the real infection rate closer to one million.3 Unlike other flu strains, the H1N1 virus has remained active throughout the summer, with outbreaks at summer camps and on college campuses across the country. As a result, health officials are bracing for the H1N1 virus to kick off an earlier start to this year’s flu season.

The H1N1 Flu Summit

At a federal government-sponsored H1N1 flu summit in July, the secretary of health and human services (HHS), Kathleen Sebelius, called for states to avoid complacency and challenged public officials to put definitive plans in place for dealing with the H1N1 flu pandemic.4 From policies for school closings and advice for businesses to health care worker guidelines and public service announcements, there is much work ahead. HHS has committed $884 million to boost its supply of critical vaccine ingredients (antigen and adjuvant). And to help with preparedness plans, the federal government has allocated $350 million in grants to aid state and local public health agencies with mass vaccination and treatment plans.5 The State of New York was granted $9.5 million for public health emergency response efforts and $3.3 million for hospital preparedness. New York City can expect $7 million and $2.4 million, respectively.6 HHS has also created www.flu.gov, a new Web site with a wealth of information on both H1N1 and seasonal flu.

Steps to Preparedness

For health care providers, preparedness is twofold: (1) dealing with patient treatment issues in a public pandemic and (2) developing and enforcing policies to keep workers in virtually every health care setting (hospitals, clinics, doctors’ offices, long-term care facilities, nursing homes, etc.) from getting sick and potentially infecting patients. These include a variety of safe practices for everything from hand-washing regimens to promoting vaccine campaigns (see “Vaccinations for Health Care Personnel”). Refer to “Prepare for the Onslaught: Flu Prevention and Control at Hospitals and Long-Term Care Facilities” for more on dealing with influenza infections.

Like its counterparts in other states, New York’s Department of Health (NYSDOH) has been reviewing plans for working with the Strategic National Stockpile (SNS) and the State Medical Emergency Response
information to patients so that personnel can focus on patient care.

Testing for Influenza
Hospitalized patients with acute febrile respiratory illness, including patients with pneumonia and acute respiratory distress syndrome or ARDS, should be tested for influenza. Diagnostic testing for influenza is not routinely recommended in the outpatient setting, especially for otherwise healthy persons with mild illness. These recommendations are based on several factors. First, in the setting of known influenza activity in the community, the accuracy of clinical diagnosis may be as high as 85 percent. Clinical diagnosis may not be as accurate among patients requiring hospital admission or the elderly. Second, although office-based diagnostic tests for influenza infection are available, these tests have a relatively low sensitivity for the detection of influenza. For instance, rapid antigen tests have been shown to have only 18–51 percent sensitivity in the detection of pandemic H1N1 influenza A. The direct fluorescent antigen test (DFA) has somewhat higher sensitivity, but false-negative results do occur. Thus, a negative test result should not be considered to rule out the possibility of influenza infection if clinical suspicion is high. PCR-based (polymerase chain reaction) testing has demonstrated higher sensitivity for the detection of influenza virus infection, including infection with pandemic H1N1. PCR is available at the NYCDHMH Public Health Laboratory for testing in critically ill, hospitalized patients who test negative for influenza A by rapid test or DFA. Specimens must be submitted with a completed PHL viral identification submission form (available at www.nyc.gov/html/doh/downloads/pdf/labs/lab-forms-sflu.pdf). Providers in other areas of New York should consult with their NYSDOH regional epidemiologist if PCR testing is felt to be necessary. In addition, the NYSDOH has given conditional approval to at least one commercial reference laboratory to perform PCR testing for influenza, including pandemic H1N1 in New York. However, the turnaround time associated with this test (greater than 24–48 hours) limits its utility in the clinical management of patients, especially ambulatory patients with mild or moderate illness.

Treatment of Influenza Infection
Antiviral treatment of confirmed or suspected influenza infection is currently recommended for all persons hospitalized with influenza infection and those with risk factors for complications of influenza (see "Antiviral Drugs Combat Flu Viruses"). These persons include:

- Children younger than five years of age.
- 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), neurologic, neuromuscular, or metabolic disorders (including diabetes mellitus);

Stay Flu-Free with Simple Safeguards*

- Use a tissue to cover your mouth or nose when you cough or sneeze.
- Frequently wash hands or use alcohol-based rubs.
- Avoid touching your eyes, nose or mouth.
- Steer clear of close contact with sick people.
- Stay home if you are sick and limit contact with others—that means no office or no school (wait until symptom-free for 24 hours).

*Based on guidelines in Centers for Disease Control and Prevention, “Novel H1N1 Flu (Swine Flu) and You: Prevention & Treatment,” http://www.cdc.gov/H1N1flu/qa.htm.

H1N1 Flu Meets Social Media
http://www.cdc.gov/socialmedia/h1n1/

Health care professionals and consumers can get the latest CDC updates on the H1N1 flu pandemic via RSS feeds, mobile Web, Twitter and social networking sites such as Facebook and MySpace.

Preparing Your Practice for the Fall Flu Season continued from page 3

- immunosuppression, including that caused by medications or by HIV;
- pregnant women;
- persons younger than 19 years of age who are receiving long-term aspirin therapy; and
- residents of nursing homes and other chronic-care facilities.

Treatment of other persons should be based on clinical judgment. When treatment is being considered, it should be initiated as early in the course of illness as possible, preferably within 48 hours of symptom onset, in order to provide benefit. However, treatment should not be withheld from severely ill persons who present for care more than 48 hours after illness onset.

Because of variable antiviral susceptibility among the various circulating influenza viruses (see table), when treatment is being initiated the antiviral agent(s) selected should be based on currently circulating strains and known resistance patterns. During the 2008–2009 season, recommended treatment regimens included zanamivir (Relenza) monotherapy or combination therapy with oseltamivir (Tamiflu) and an adamantane (rimantadine or amantadine). As of the end of June 2009, over 95 percent of influenza isolates from New York City patients were pandemic H1N1 2009, and the remainder were seasonal H3N2. Thus, at that time, monotherapy with a neuraminidase inhibitor (oseltamivir or zanamivir) was considered to be sufficient. Treatment recommendations are subject to change during the fall influenza season when it is determined which strains are circulating. Such information will be provided by the CDC, NYSDOH, and NYCDOHMH.

Oseltamivir is administered orally as either a tablet or a suspension. Use of oseltamivir in those less than one year of age was approved under an Emergency Use Authorization by the FDA in response to pandemic H1N1; thus, Tamiflu can be used in persons of all ages. The standard adult dose is 75 mg twice daily for five days. Dose reductions are necessary for patients with impaired renal function. Zanamivir is approved for use in persons seven years of age or older. It is administered as an inhaled powder, with a standard adult dose of two 5-mg inhalations twice daily for five days. Zanamivir should be used with caution in persons with underlying airway disease due to the potential for bronchospasm. The delivery device is different from other commonly used inhaled medications, so care should be taken to make sure that patients receive adequate instructions.

Chemoprophylaxis
Antiviral chemoprophylaxis should be considered for exposed, nonimmune (unvaccinated) persons at increased risk for complications of influenza infections, health care workers exposed to influenza without adequate personal protective equipment, and in the control of outbreaks in nursing homes and other long-term care and congregating settings. Chemoprophylaxis is not currently recommended for prevention of illness in healthy children or adults. The typically recommended duration of antiviral chemoprophylaxis is 10 days after the last known exposure to influenza.

Influenza Vaccination
Despite all of the attention recently given to pandemic H1N1, clinicians and patients must remember that the seasonal influenza vaccine is still important. This vaccine will provide protection against seasonal influenza A and influenza B strains, which, in addition to pandemic H1N1, are likely to circulate during the upcoming influenza season. In addition, prevention of human infection with these viruses may reduce the risk of reassortment between pandemic H1N1 and seasonal influenza viruses in human hosts. Recommendations for the use of the trivalent influenza vaccine have been made by the ACIP. In addition to the standard trivalent seasonal influenza vaccine, a pandemic H1N1 influenza vaccine is being produced for the 2009–2010 influenza season. Unlike the seasonal influenza vaccine, the pandemic H1N1 vaccine will not be available from pharmaceutical distributors but will be procured, purchased and allocated by the U.S. government through state and local public health authorities. Although it was initially anticipated that two doses of this vaccine would be necessary, recent studies have suggested that a single dose may be sufficient. Official recommendations will be provided prior to distribution of the vaccine. The first doses are expected to be delivered in mid-October, with subsequent production of enough vaccine for the entire U.S. population over the following months. Because there will not initially be a sufficient amount of vaccine to allow for vaccination of the entire population, the CDC’s Advisory Committee on Immunization Practices (ACIP) has recommended a number of target groups for whom pandemic H1N1 vaccination will be prioritized. These groups were determined based on risk factors for infection and for complications of infection observed during the initial U.S. outbreak of pandemic H1N1 in the spring of 2009. These groups include pregnant women, people who live with or care for children less than six months of age, health care workers and emergency services personnel, persons six months to 24 years of age, and people between the ages of 25 and 64 who are at higher risk for H1N1 infection and its complications because of chronic health disorders or compromised immune systems. More information on the distribution, administration and documentation requirements for the pandemic H1N1 vaccine will be provided by NYSDOH and NYCDOHMH as it becomes available.
Health care personnel are included on the priority lists for both seasonal and pandemic H1N1 influenza vaccination. Although vaccination of these persons has been strongly recommended by the CDC, the Joint Commission and other groups for several years, vaccination rates among health care personnel have remained dismally low (approximately 40–50 percent). New York state recently took a major step toward protecting health care personnel and their patients from influenza infection by passing legislation that requires many health care personnel to be vaccinated against influenza (see “NYS Requires Flu Vaccines for Health Care Personnel”). Effective August 13, 2009, health care facilities must require that personnel be immunized against influenza virus(es) as a precondition to employment and on an annual basis and must provide or arrange for the vaccine at no cost to their personnel. Health care facilities to which this requirement applies include hospitals, diagnostic and treatment centers, certified home health agencies, long-term home health care programs, AIDS home care programs, licensed home care services agencies, and hospices. It is expected that during the 2009–2010 season this regulation will apply to both the seasonal influenza vaccine and the H1N1 vaccine. For more information about this new requirement, refer to http://www.nyhealth.gov/regulations/emergency.


INTERNET RESOURCES
www.health.state.ny.us/diseases/communicable/influenza/h1n1
www.pandemicflu.gov
www.cdc.gov/flu

TELEPHONE TRIAGE PROTOCOL FOR PATIENTS WITH SUSPECTED INFLUENZA INFECTION (ANTIVIRAL MEDICATIONS)

1. Has H1N1 influenza (swine flu) been documented in the community? 
   **If no, do not use this protocol.**

2. Is there a documented fever of 100°F (37.8°C) or higher? 
   **If no, go to item 12.**

3. Does the patient have symptoms of rhinorrhea/nasal congestion, cough, or a sore throat? 
   **If no, go to item 12.**

4. Did the illness start abruptly (e.g., going from feeling well to quite ill in a few hours)? 
   **If no, go to item 12.**

5. Is there any rash? 
   **If yes, go to item 11.** 
   There is an 80 percent likelihood of influenza infection (when influenza is present in the community).

6. Is the patient between the ages of 5 and 49 years? 
   **If no, go to item 11.**

7. Has the illness been present for less than 36 hours? 
   **If no, go to item 11.**

8. Does the patient or patient’s parent or caregiver feel that the patient should be seen by a physician? 
   **If yes, go to item 11.**

9. Does the patient have an ongoing chronic illness, or is there any coexisting psychiatric illness or any indication of renal failure? 
   **If yes, go to item 11.**

10. **This patient is a candidate for over-the-phone prescribing of antiviral therapy. Advise follow-up if condition worsens and routine follow-up two to three days after initiating therapy. Discuss the potential side effects.**

11. This patient should be evaluated (interviewed and/or examined) by a physician.

12. The illness may be influenza or another respiratory virus. If significant concerns exist on the part of the patient, parent, or other person, consider scheduling a visit with a health care professional.

Antiviral Susceptibility of Recently Circulating Influenza Viruses

<table>
<thead>
<tr>
<th>Antiviral agent</th>
<th>Seasonal H1N1 influenza A</th>
<th>Seasonal H3N2 influenza A</th>
<th>Seasonal influenza B</th>
<th>Pandemic H1N1 influenza A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adamantanes (amantadine, rimantadine)</td>
<td>Susceptible</td>
<td>Resistant</td>
<td>No activity</td>
<td>Resistant</td>
</tr>
<tr>
<td>Oseltamivir (Tamiflu)</td>
<td>Resistant</td>
<td>Susceptible</td>
<td>Susceptible</td>
<td>Susceptible</td>
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<tr>
<td>Zanamivir (Relenza)</td>
<td>Susceptible</td>
<td>Susceptible</td>
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Rapid Flu Tests: When Timing is Everything

Rapid diagnostic testing for influenza may be appropriate for office practices or other settings where a Clinical Laboratory Improvement Amendments (CLIA) approved laboratory is not available. In such cases, however, a CLIA waiver is necessary.

The Centers for Disease Control and Prevention (CDC) mentions two situations where rapid testing for influenza may be appropriate:

- when individual patients exhibit flu-like signs and symptoms and clinical decisions hinge on the diagnosis; and
- in group settings such as nursing homes and long-term care facilities, to help rule out flu as a factor in large-scale outbreaks of respiratory illness.

Generally, rapid flu test results are available within 15 to 30 minutes; however, these office-based tests’ sensitivity for detection of seasonal influenza A is described as low to moderate; sensitivity for influenza B is lower than that for A. In addition, test results cannot provide influenza subtype information and information on sensitivity for H1N1 is limited. False-positive and false-negative test results also can occur.

Whether to test and then treat a patient with suspected influenza is a clinical judgment based on multiple factors including: the presence of active influenza cases in the community; the existence of a plausible epidemiological link; clinical suspicion; and severity of illness and risk of complications. Additional factors to consider are related to the management of multiple cases and the likelihood of the spread of infection to others.


The Joint Commission Takes a Look

With all the endorsements, why are nearly 60 percent of our nation’s HCP opting out of annual flu immunizations? To find out, the Joint Commission on Accreditation of Healthcare Organizations conducted a 10-month project to examine the issues.

The resulting monograph, released in 2009, explores current administrative considerations, issues surrounding some HCP opposition to immunization, and strategies for improving HCP vaccination rates. It cites numerous studies showing that HCP immunization can make a tremendous difference in reducing influenza-related morbidity, mortality, staff shortages and costs across health care institutions.

One study even equates vaccination among HCP in long-term care facilities with saving lives by reducing influenza-related infections and deaths. However, the bottom line is that the current HCP vaccination rate of around 40 percent would need to climb to 80 percent or better to provide the level of immunity necessary to prevent health care-related flu outbreaks.

Flu Vaccines Help HCP Too

It’s not just patients and institutions that benefit from immunization. For HCP, getting the flu vaccine:

- is 70–90 percent effective at providing infection protection in healthy adults;
- minimizes their risk of inadvertently transmitting the flu to patients (and others);
- reduces absenteeism and incidences of missing work due to flu infections; and
- reduces presenteeism or the tendency (or need) to work through flu-like illnesses without fully functioning.

Why HCP Opt Not to Get Vaccinated

The Joint Commission lists more than 10 reasons HCP use to opt out of flu immunization. Certainly, some HCP have cultural or medical reasons for declining the flu vaccine. But typically, the reasons focus more on fear of adverse reactions or contracting the flu from the vaccine, the feeling it is ineffective or unnecessary based on an HCP’s built-up exposure resistance, the desire to avoid medications, the view that the flu is a negligible illness, and the lack of recommendations from physicians and peers.

Mandatory versus Voluntary Vaccine Program

In its monograph, the Joint Commission discusses the pros and cons of mandatory versus voluntary flu immunization for HCP, citing studies on both sides of this issue. Among the arguments mandating seasonal flu vaccines for HCP are the low vaccine rate under voluntary measures, the infection risk to HCP and their patients, the potential for legislators to step in, and the fact that the measures work (as evidenced by similar mandated vaccine programs for school children). Others counter that mandatory programs are coercive, invasive, can degrade staff morale, and present potential legal and liability challenges.

Still, some hospitals, such as Virginia Mason Medical Center in Seattle, have mandated vaccination (with exemptions for religious and medical reasons) with great success. With HCPs, sales reps, vendors and even volunteers participating, the center boasts a 99 percent compliance rate and has created a culture where immunization is viewed as a key measure

Vaccinations for Health Care Personnel

According to the Centers for Disease Control and Prevention (CDC), up to 20 percent of the U.S. population contracts seasonal flu annually, more than 200,000 people are hospitalized, and 36,000 die from influenza or related complications.1 Hence, it’s not surprising that the CDC and the Advisory Committee on Immunization Practices (ACIP) recommend flu immunizations for anyone who is eligible, particularly health care personnel (HCP) who are at increased risk of exposure. To help address influenza and flu vaccine concerns, the CDC offers Web-based Q&A targeted for HCP. This go-to resource provides answers about vaccine efficacy, side effects, the nasal spray versus flu shot decision, criteria for who should or should not get a vaccine, detecting flu symptoms, and what to do if infected.2

These recommendations on flu vaccines (particularly the new H1N1 influenza vaccine) apply to all personnel working in health care organizations, from hospital surgeons and ED nurses to private-practice staff and long-term care aids. Most leading health care groups, including the World Health Organization (WHO) and the American Medical Association (AMA), support this approach.

FALL 2009

in focus
for protecting patients.\(^1\) And while voluntary programs have proven largely ineffective, some studies tout the hepatitis B vaccine program as a model for success. This voluntary program combines targeted education, free immunizations, and informed declinations, resulting in a 75 percent immunization rate among HCP.\(^1\)

**Five Steps to Improve Vaccination Rates**

The CDC recommends taking a five-step approach to improving annual influenza vaccine rates among HCP, which includes providing:

- multifaceted HCP education and marketing campaigns;
- free flu vaccines for eligible HCP;
- convenient access at the work site (all shifts) with role-model support and a team approach;
- declination forms for HCP who decline the vaccine for nonmedical reasons; and
- HCP vaccination levels as part of an institution’s patient safety measurements.

Will this approach work? The Joint Commission findings show that organizations need to adapt these steps and develop a multifaceted strategy to fit their particular needs and HCP audience. It also cites the importance of regular promotion as well as availability. For example, simply offering the vaccine might yield a 5 to 19 percent acceptance. Add some promotion and boost acceptance to 26 to 54 percent. Now add an annual promotional campaign and acceptance rates climb as high as 61 to 97 percent.\(^2\) Whatever the approach, it’s clear that measures need to be adopted to boost immunization rates among HCPs.\(^3\)

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2. Ibid.
4. Ibid.
5. Ibid.
8. Ibid.

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### Antiviral Drugs Combat Flu Viruses

The frontline strategy for preventing influenza virus infections is still immunization with an annual flu shot or nasal-spray flu vaccine. However, antiviral drugs serve as the next line of defense for both prevention and treatment of influenza viruses, including the influenza A H1N1 virus.

Antiviral drugs are prescribed to prevent or cure a disease caused by a virus and work by interfering with the virus’s ability to replicate. According to the Centers for Disease Control and Prevention (CDC), administering antivirals as soon as possible after someone has been exposed to H1N1 is 70–90 percent effective in preventing the flu.

When it comes to treatment, antiviral drugs work best to minimize symptoms when given within 48 hours of the flu onset. However, the CDC recommends that physicians extend that 48-hour window for patients who are hospitalized or considered high-risk for flu-related complications such as young children and the elderly.\(^4\)

Of the four antiviral drugs approved for use against flu in the U.S., the CDC recommends only two as effective in treating and preventing the H1N1 flu virus: oseltamivir and zanamivir, better known respectively as Tamiflu and Relenza.

In June 2009, the CDC’s Advisory Committee on Immunization Practices (ACIP) revised its overall recommendations for antiviral treatment (based on some viral resistance to oseltamivir) and now calls for:

- zanamivir or a combination of oseltamivir and rimantadine (or amantadine if rimantadine is not available) to treat seasonal influenza A (H1N1) virus infections; and
- oseltamivir or zanamivir to treat seasonal influenza A (H3N2), influenza B, or the novel influenza A H1N1 virus infections.

These revised recommendations are subject to change as more information becomes available.\(^5\) In late September, the CDC updated its interim recommendations on the use of antivirals for flu treatment and prevention.\(^6\)

### What About Pregnancy and H1N1 Flu Antivirals?

Women who are pregnant, especially during their last trimester, are categorized as high risk for flu-related complications. With this in mind, a recent medical review in the *Canadian Medical Association Journal* examined available literature on the safety of using either oseltamivir or zanamivir antivirals to treat H1N1 flu infections in women who are pregnant or breast-feeding. This comprehensive review also relied on information from Japan, which has a longer history of using these antivirals in treating flu. Both drugs appear to be compatible with breast-feeding and are not thought to result in significant drug exposure to the infant. In fact, women are advised to continue nursing infants because of the anti-infective benefits of breast milk. However, during pregnancy, oseltamivir is the preferred antiviral to use, primarily because more data is available regarding exposure and safety.\(^7\) The CDC’s Web site also contains information on pregnant women and the influenza vaccine.\(^8\)

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6. Ibid.
8. Ibid.
NYS Requires Flu Vaccines for Health Care Personnel

For years, the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) have urged health care workers to get annual flu shots. The reasoning is obvious: health care workers are typically on the front lines of exposure during influenza outbreaks, which can put them (and the patients they treat) at risk for infection. In fact, studies at health care institutions, from hospitals to long-term care facilities, show that many health care personnel do contract the flu. Based on New York State Department of Health (NYSDOH) data, over a seven-year period more than 5,000 workers and 19,000 patients at hospitals and nursing homes had suspected or confirmed cases of the flu. Despite the recommendations, few health care personnel get an annual flu shot or nasal-spray vaccine. In New York and around the country, the average participation rate in voluntary inoculation programs hovers around 40 percent. With this in mind and the H1N1 flu again looming, the State Hospital Review and Planning Council (SHRPC) and the Commissioner of Health adopted an emergency regulation in August. The regulation mandates that all state health care workers be immunized for the current influenza strains by November 30 each year. (If fully-licensed later this year as expected, the H1N1 flu vaccine will be included in the requirements.) Health care facilities must also cover the cost for the mandated vaccines, document administration of shots, and report on the status of the program by May 1 of the following year. This regulation applies to:

- all personnel who directly interact with patients, including employees, contract workers, students and volunteers (except for those with valid medical reasons); and
- everyone working in hospitals, diagnostic and treatment centers, certified home health agencies, long-term home health care programs, AIDS home care programs, licensed home care services agencies, and hospices.

The mandate does not apply to long-term care facilities, nursing homes, adult day care centers, etc., which fall under Public Health Law Article 21A. These organizations are only required to offer vaccines to employees each year.

At least one group expressed concern about the implications of the mandate. In an online media release (July 23, 2009) following the initial ruling, the New York State Nurses Association “strongly opposed” the mandatory measure. Calling it an “onerous mandate,” the group cited the flu vaccine’s variable effectiveness year to year, the lack of exemptions for cultural and religious preferences, and the resulting “serious threat” to the shrinking availability of nurses.

New York is the first state to enact free, mandatory inoculations for health care personnel while other states are considering regulations of their own.

2. Ibid.

Watch for an Updated National Vaccine Plan

The National Vaccine Program Office (NVPO), established by the Department of Health and Human Services (HHS), oversees and coordinates activities related to vaccines, from research, development and testing to procurement, distribution and funding. Another key area of NVPO responsibility is the evaluation of vaccine effectiveness and adverse effects.

To address these tasks, the NVPO issued a National Vaccine Plan in 1994 that aimed to develop and improve vaccines, work to ensure safety and effectiveness, provide comprehensive education on the benefits and risks, and better use vaccines to prevent illness and save lives. Some specific goals included tackling the childhood immunization portfolio, seeking new vaccines for HIV and STDs, and looking at new approaches for vaccine safety and delivery.

It has been years since that initial plan was created, and much has changed. As a result, in 2008, the NVPO, along with the Centers for Disease Control and Prevention (CDC), the Institute of Medicine (IOM) and other federal agencies, evaluated the 1994 plan goals and accomplishments. The review committee then drafted a new plan.

This year, following a “reality check” review by the National Vaccine Advisory Committee (NVAC), the IOM has conducted five breakout sessions to gather recommendations on the 2008 draft plan from national stakeholders in medicine, public health, industry and vaccinology. Public collaboration has also been sought from advocacy groups, global partners, health associations and individuals. The result of all this analysis promises to be a new plan with priority actions for addressing the changing face of vaccines over the next five years. Expect to see details on this updated plan released later this year.

A Day in the Life of an ED During the H1N1 Outbreak

A doctor at the epicenter of the H1N1 influenza outbreak in New York City shares her story.

After more than 30 years as a hospital emergency department physician, Diane Sixsmith, MD, chairman of the Department of Emergency Medicine at The New York Hospital Medical Center of Queens, calls the spring 2009 H1N1 influenza outbreak one of the most difficult experiences of her career.

Due to the media attention surrounding the outbreak as well as the mayor and office-based physicians urging residents to visit hospital emergency rooms if they or a family member felt ill, in May “we went from zero to 60 almost overnight,” Dr. Sixsmith recalled. “We were seeing an extra 200 to 300 children a day.” At peak times, the ED treated as many as 40 to 50 patients per hour, she said. And no one had any idea when the deluge would end.

ED volume jumped 31 percent in May, the hospital reported. During the outbreak, from May through June, the ED saw about 10,000 additional patients, Dr. Sixsmith said. The greatest flow of patients came in the evening around dinner time and then again between 8 pm to 9 pm after working parents came home and started bringing their children to the hospital.

Fortunately, Dr. Sixsmith noted, the vast majority of ED visitors did not need emergency medical care.

Mixed messages from the Centers for Disease Control and Prevention (CDC) and the New York City Department of Health and Mental Hygiene (NYCDOHMH) made the early days of the outbreak confusing. Initially, the hospital was told to swab everyone and to liberally dispense treatment and prophylactic medication. A few days later, as the volume of patients increased and it became apparent that not everyone with mild symptoms required testing and emergency department treatment and that it would be impossible to provide those services to everyone, the hospital began informing visitors that it would not be testing or dispensing antivirals to everyone—only to those who were very ill. It also urged those who were not severely ill to stay at home.

The hospital soon developed a system: Information brochures and posters available at all entrances alerted visitors to hospital policy regarding the outbreak. The information, now on the hospital Web site, provided answers to questions frequently asked by visitors to the ED. This included whether the hospital would provide testing and medication and when ill residents should seek medical attention or go to the hospital. Hand wipes and sanitizer were located throughout the hospital and ED. Visitors to the ED were met by volunteer “greeters” who wore masks and had received training on how to ask questions to help quickly identify those with flu-like symptoms. These patients were then given masks and sent to a separate waiting room where a nurse was assigned to triage patients and manage patient flow. Generally, ED staff did not wear masks during the outbreak—“we felt it was more important to mask the patients”—to stem the spread of the illness Dr. Sixsmith explained. However, employees with young children did wear them. Also, pregnant employees were reassigned to work in other areas.

As ED staff began working 12-hour days and coming into contact with sick patients, some did become ill, Dr. Sixsmith said. But all were required to follow hospital policy that directed sick employees to stay home. Due to the closure of three other Queens hospitals just months before the outbreak, “we found we couldn’t receive as much assistance as we would have liked from other hospital departments, because many already were strained by increased workloads, she said.

The hospital has made plans for the fall flu season. Things that worked well in the spring, such as the greeter assistance with patient screening and separate waiting room, will be in place again. In addition, the hospital will conduct education sessions and distribute information to local schools, businesses and nursing homes. Staff physicians will receive information on the various resources available from the hospital and agencies such as the CDC and NYCDOHMH to assist them in advising and treating patients. Existing hospital-affiliated clinics and ambulatory care centers may also be made available during extended hours to help manage the influx of flu patients.

During the spring outbreak, six to eight additional employees were needed at all times to cover the ED. Hence, staff is already being asked to volunteer for the possibility of scheduled overtime during the peak flu months. In addition, everyone will be asked to get a flu shot and compliance will be monitored closely.

Right now, the hospital does not plan to implement a telephone triage system to screen patients, Dr. Sixsmith said, explaining that the hospital did not have the manpower to screen a huge volume of calls and “we don’t want to discourage people who might need care” from coming into the hospital. But such a process could be a viable one for physicians’ offices, she added.

One thing the spring flu outbreak brought to light is that “there isn’t a lot of extra give in our system to deal with disaster situations.” Dr. Sixsmith said. Her hope is that many local residents will have built up immunity to H1N1 and fewer cases will present in the fall. “I don’t want to go through what we went through in the spring.” She emphasized, “the number one lesson I learned was to plan ahead. The second lesson is that it was important for department leaders to meet every day to review policies and what we were doing; to have a good communication process and ensure that we had all the resources (including masks, linens, etc.) we needed and knew how well we would be staffed.” Such preparations should help the ED successfully manage the fall flu season.
D espite many differences in both the patient base and the range of care, the challenges of controlling infections at hospitals and long-term care facilities are surprisingly similar. A look at facility-based guidelines and recommendations issued by the Centers for Disease Control and Prevention (CDC) confirms this commonality. The guides for each facility present a nine-step strategy for preventing and controlling influenza infections and transmissions. Overall, this strategy focuses on basic infection control measures to help protect health care workers and the patients they treat. Measures include everything from the use of vaccination and antiviral medications to active surveillance and droplet precautions. Following is a countdown of the CDC’s recommendations for both long-term care and acute care facilities:

**Annual Vaccinations**

According to the CDC, getting an annual flu vaccine is the top measure for controlling and preventing flu outbreaks. While there are very specific criteria and conditions for which type to select, either the inactivated influenza vaccine or the live attenuated vaccine is effective at limiting infection and transmission. Annual flu vaccines (nasal or intramuscular) are recommended for all eligible, high-risk patients/residents and health care personnel (see “Vaccinations for Health Care Personnel”).

**ACTIVE SURVEILLANCE**

Despite vaccinations and other precautions, outbreaks of influenza can still occur (even among those who have been vaccinated). Coupling vigilant monitoring of respiratory illness with quick detection and prompt control measures is essential to prevent the flu from spreading in these facilities.

**THOROUGH EDUCATION**

Don’t underestimate the importance of educating health care personnel and patients/residents (as appropriate) on effective control measures, flu signs and symptoms, and ways to get tested. A wide range of free educational materials on flu control and prevention are available at the CDC’s Flu Gallery Web site. These materials include everything from traditional posters, buttons and handouts to e-cards, videos and podcasts. (For more, visit http://www.cdc.gov/flu/professionals/flugallery/index.htm.)

**INFLUENZA TESTING**

It is vital that hospitals and long-term care facilities institute procedures for performing both rapid and cultured influenza testing whenever clusters of respiratory illness are detected, or where influenza infection is suspected in an individual (patient, resident, or health care worker). Because rapid flu tests such as the rapid diagnostic test or immunofluorescence are moderately sensitive, the CDC recommends verifying negative results with a viral culture or polymerase chain reaction (PCR) test.

**USING ANTIVIRALS**

During flu outbreaks, use antiviral drugs to treat patients and residents and make these drugs available to health care personnel as needed. In the case of long-term care, residents should be treated for at least two weeks (and possibly as long as one week after the last case of infection). The CDC also stresses the importance of monitoring for potential side effects and for virus strains that may be resistant to these medications. Detailed, up-to-date antiviral recommendations can be found at the CDC Web site (www.cdc.gov/flu/professionals/antivirals).

**COMMON SENSE PROGRAMS**

What the CDC calls “Respiratory Hygiene/Cough Etiquette” programs closely resemble those common sense precautions reiterated by caregivers and teachers for years. These include providing the necessary supplies to keep hands clean; supplying tissues or masks to cover one’s nose and mouth for coughs and sneezes; distancing coughing persons (3–6 feet) from others; and encouraging patients, residents and visitors to alert health care personnel to any respiratory symptoms they may have. For health care personnel, contact with potentially infected persons is unavoidable; however, safe

Prepare for the Onslaught:
Flu Prevention and Control at Hospitals and Long-Term Care Facilities
For health care personnel, contact with potentially infected persons is unavoidable; however, safe hygiene practices can help prevent various infections from traveling through your facility.

Outbreaks Happen—What’s Next?
Even with the best precautions, influenza can and does surface at health care institutions. According to the CDC, long-term care facilities need to be especially vigilant for both clusters, three or more cases of acute febrile respiratory illness (AFRI) within two to three days, and actual outbreaks, characterized by a sudden, abnormal increase of AFRI cases or a single confirmed case of influenza. When an outbreak occurs, quickly implementing these infection control measures for rapid testing, diagnosis, treatment and isolation, combined with vigilant monitoring, can impact the level and severity of infection. Hospitals and long-term care facilities must also observe any state and local requirements for outbreak notification and viral testing (often within 24 hours).

What about the H1N1 Pandemic?
When the World Health Organization (WHO) declared the H1N1 influenza virus a pandemic, it triggered a wide range of responses from community, government, and health care groups for infection planning and control. For example, the American College of Emergency Physicians (ACEP) released a national strategic plan to help first responders and hospital emergency departments (EDs) manage the anticipated flood of H1N1 cases. Recognizing that these health care personnel are on the front lines of a pandemic medical response, this comprehensive 16-page plan offers a management strategy based on the Department of Homeland Security’s directive for handling biological threats.

The ACEP plan addresses the following strategic areas: providing situational awareness, protecting ED infrastructure and personnel, preventing disruptions to service delivery, enabling organized, timely medical response, and ensuring return to normal (steady state) conditions. It assesses the current H1N1 flu threat, rates our vulnerability based on prior pandemics and current patterns, and offers a potential scenario of what to expect this fall. Based on this information, it presents planning assumptions, determines current ED response capabilities, and identifies some critical actions that need to be performed. To further assist hospital EDs, this plan provides a comprehensive checklist of 26 categories outlining the actions, roles and responsibilities necessary to manage outbreaks in this flu pandemic.

The CDC has also issued additional flu pandemic planning and response guidelines geared for the health care community—including medical offices, outpatient facilities and clinicians—as well as the community at large, from day care centers and camps to colleges and businesses. These guidelines are available through the CDC’s H1N1 flu Web site at http://www.cdc.gov/h1n1flu/

Is Your Institution Ready for Pandemic Influenza?
By now, most health care institutions are probably gearing up for the predicted surge in H1N1 cases this fall. In addition to some of the guidelines described previously, the CDC has developed a series of planning checklists to assist health care management personnel in evaluating and improving their preparedness and response to pandemic influenza. These tools can be used in conjunction with requirements from state and local health departments, federal regulations, and accreditation standards such as the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). Separate checklists are available to help hospitals, long-term care facilities, emergency medical services, physician practices, clinics and home health care providers effectively prepare for the potential onslaught of flu infections.


The National Vaccine Injury Compensation Program (VICP)

Immunization programs in the U.S. have had a successful history of combating and virtually eradicating serious diseases such as polio. But in the 1980s, reports of potential DTP (diphtheria, tetanus, pertussis) vaccine-related side effects cast doubt on vaccine safety, prompting a flurry of lawsuits. As childhood immunization rates plummeted and more manufacturers stopped production, the U.S. faced a health care crisis with vaccines in short supply.

A coalition of concerned leaders from government, the health care industry and the business sector responded by enacting the National Childhood Vaccine Injury Act of 1986, which led to the National Vaccine Injury Compensation Program (VICP) in 1988. The VICP was Congress’s attempt to stabilize the vaccine supply and costs by offering “a no-fault alternative to the traditional tort system for resolving vaccine injury claims,” with compensation in rare cases where injury did occur.¹ By compensating consumers and shielding vaccine makers and health care providers from liability, this program has also helped promote development of new, safer vaccines. Statistics through 2007 reveal about 7,000 claims had been filed (for adverse effects other than autism), 2,000 were settled, with average settlements of $850,000, and 700 claims were still outstanding.²

How VICP Works

Anyone claiming vaccine-related injury (or death) can seek compensation from the Vaccine Trust Fund by filing their claim in the U.S. Court of Federal Claims and naming the Secretary of Health and Human Services (HHS) as the respondent. To qualify for compensation, a claim must meet at least one of three eligibility requirements. It must:

- demonstrate that the injury occurred and is included on the Vaccine Injury Table;
- prove the vaccine significantly aggravated a pre-existing condition; or
- show that the vaccine caused the condition.³

The Vaccine Injury Table, maintained by HHS, currently includes 12 vaccines and an open category covering a number of newer vaccines that have been recommended by the Centers for Disease Control and Prevention (CDC) for routine administration to children. The latest to be added include hepatitis A, trivalent influenza (all annual flu vaccines), meningococcal, and human papillomavirus (HPV) vaccines.⁴

Issues of Autism

Since 2001, more than 5,000 families have filed with the VICP claiming that the MMR (measles, mumps and rubella) vaccine caused autism in their children. Many claims cite thimerosal (a mercury-containing preservative formerly used in the MMR vaccine) as the culprit. With a backlog of these cases, the VICP convened a special vaccine court (part of the U.S. Court of Federal Claims) to examine causation and to rule on the issues. In its February 2009 ruling on a number of these cases, the court found no links between MMR vaccines and thimerosal, alone or combined, and autism. This ruling was upheld on appeal in July 2009, with several appeals still pending.⁵

In its statement on thimerosal and autism, the CDC also supports this view. While acknowledging the evident increase in childhood autism rates and indicating a commitment to understanding the causes, the CDC clearly dismisses any causation factors related to the MMR vaccine and thimerosal. As proof, it cites a number of studies and a 2004 Institute of Medicine (IOM) scientific review supporting this view.⁶

Although a number of families have tried to bypass the VICP process by issuing direct suits against makers of the vaccine and thimerosal, and some have filed class action suits, prevailing research on the subject appears to enforce the court’s 2009 decisions. In fact, one of the key studies (Lancet, 1998) linking the MMR vaccine (not thimerosal) to autism was found to be seriously flawed. The lead physicians involved in this study are currently under investigation in England for questionable research practices.⁷

Created by Congress in 1988, this program has helped promote the development of new, safer vaccines.

³ National Vaccine Program Office, “National Vaccine Injury Compensation Program.”
Additional Resources
For more information, refer to the following resources:

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<tr>
<th>LOCAL LINKS</th>
<th>NATIONAL LINKS</th>
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<td><a href="http://www.health.state.ny.us">http://www.health.state.ny.us</a></td>
<td><a href="http://www.preventinfluenza.org">http://www.preventinfluenza.org</a></td>
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<tr>
<td>NYS Department of Health (DOH) home page</td>
<td>Prevent Flu Now! site</td>
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<td>Immunization and infection control for health care professionals, facilities and consumers</td>
<td>(National Influenza Vaccine Summit)</td>
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<td><a href="http://www.ny.gov/h1n1/index.html">http://www.ny.gov/h1n1/index.html</a></td>
<td>Flu prevention and control tips for patients and health care professionals</td>
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<td>NYS H1N1 Influenza Update page</td>
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<td>State updates on H1N1 pandemic</td>
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<td>Influenza and H1N1 resources</td>
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<td>NYS DOH ServNY home page</td>
<td>Centers for Disease Control and Prevention (CDC) MMWR site</td>
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<tr>
<td>A registry of health care and mental health professionals who wish to volunteer during an emergency or major disaster</td>
<td>Influenza vaccine recommendations from the Advisory Committee on Immunization Practices (ACIP), July 31, 2009</td>
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<td><a href="http://www.nyslibrary.gov/reference/swineflu.htm">http://www.nyslibrary.gov/reference/swineflu.htm</a></td>
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<td>Selected H1N1 Web sites</td>
<td>CDC vaccines and immunizations site</td>
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<tr>
<td>NYC Department of Health and Mental Hygiene flu page</td>
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<tr>
<td>Information on flu, immunizations, and other resources</td>
<td><a href="http://www.cdc.gov/h1n1flu">http://www.cdc.gov/h1n1flu</a></td>
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<td>CDC novel H1N1 site</td>
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<td>National/global information on H1N1, avian and pandemic influenza</td>
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<td>National Institute of Allergies and Infectious Diseases (NIAID) flu page</td>
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<td>Current flu information and research, including 2009 H1N1, seasonal, avian and pandemic</td>
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<td>American Academy of Family Physicians (AAFP) H1N1 site</td>
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<td>H1N1 Web links and resources for physicians, including Checklist to Prepare Doctors’ Offices for Pandemic Influenza</td>
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<td><a href="http://www.ahcanecal.org/facility_operations/clinical_practice/Pages/ArthurHealthCareAssociation/AHCA">http://www.ahcanecal.org/facility_operations/clinical_practice/Pages/ArthurHealthCareAssociation/AHCA</a> emergency readiness page</td>
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<td>American Hospital Association (AHA) emergency readiness page</td>
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<td>Information for hospitals on emergency readiness for A/H1N1 flu outbreaks</td>
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With the myriad of childhood immunizations, shots for travelers, or annual influenza shots and nasal-spray vaccines, safe storage, handling and administering are top concerns for health care professionals.

Storage Safety
Ensuring the safety of immunization vials entails the obvious: following manufacturers’ recommendations as well as practical steps related to inventory stocking and rotation. Most vaccines must be stored in a temperature-controlled environment; some are light sensitive; others exist in different forms, dictating different storage requirements.

To protect cold storage vaccine supplies, the Centers for Disease Control and Prevention (CDC) endorses these tips from the Immunization Action Coalition:

- Store in a certified refrigerator or freezer dedicated for that use only. Do not store food in the same unit.
- Continuously monitor and log temperatures to ensure they remain within allowable ranges.
- Take action if the temperature is out of range by notifying a supervisor, moving the vials, and assessing their usability.
- Be careful when retrieving vials to make sure the door is not open too long and that it reseals when closing.
- Stock and rotate vials by expiration date so that the older supplies are in the front and can be used first.
- Post a “Do Not Unplug” sign by the electrical outlet for the refrigerator or freezer.
- Have a backup power source readily available in the event of a power outage.
- Prepare a backup plan should the refrigerator or freezer fail.¹

Handling Multi-dose versus Single-dose Vials
Most multi-dose vials contain a preservative that, if the vials are stored properly, allows them to be opened and reused until their expiration date (unless contamination is detected). The exception is multi-dose vials that are reconstituted, such as meningococcal. These must be dated and used according to the manufacturer’s defined time frame. Single-dose vials, on the other hand, are intended for one-time use only. However, as it is difficult to determine when rubber seals have been punctured, these vials should not be opened until ready to draw up and administer.²

Administering Vaccines
In 2007, a number of high-profile outbreaks of hepatitis infections at ambulatory care facilities led the CDC to establish clearer guidelines for safe injection practices. These guidelines are designed to prevent health care personnel from reinjecting used needles into multi-dose vials and to keep them from reusing a single needle or syringe to inject multiple persons. Instead, the CDC advised that health care institutions train all personnel in “the use of a sterile, single-use, disposable needle and syringe for each injection given and prevention of contamination of injection equipment and medication.”³

The CDC’s Vaccine Handling and Storage Toolkit offers a wealth of resources related to immunization safety (www2a.cdc.gov/vaccines/ed/shtoolkit).

¹ Immunization Action Coalition, “Don’t Be Guilty of These Errors in Vaccine Storage and Handling” (technical content reviewed by the Centers for Disease Control and Prevention, June 2008), http://immunize.org/catg.d/p3036.pdf.

The U.S. may be focused on the H1N1 influenza pandemic, but to other countries, drug-resistant tuberculosis is a far more pervasive threat. According to the World Health Organization (WHO), there were 9.27 million incident TB cases and 13.7 million prevalent cases of TB worldwide in 2007. WHO likens the situation to a “time bomb” with an explosion of multidrug-resistant (MDR-TB) and extensively drug-resistant (XDR-TB) strains circulating among global populations. Based on 2007 data, WHO puts worldwide estimates at 500,000 infected with MDR-TB and 50,000 with XDR-TB. It notes that 85 percent of all cases were confined to 27 countries; the top four being India (131K), China (112K) and the Russian Federation and South Africa (16K each).1

By comparison, TB and its more virulent strains have been far from the limelight in the U.S. (with the exception of the XDR-TB infected U.S. airline traveler who ignited a media frenzy two years ago). In that same year, the U.S. reported more than 13,000 TB cases, 98 MDR-TB cases, and just two XDR-TB cases. There is one key indicator to note for 2007: the TB rate among foreign-born persons was 9.7 times higher than for those born in the U.S.2

The evolution of drug-resistant TB is well-documented and results from inadequate controls and improper use of TB drug treatment regimens. Although WHO has led efforts to address these issues through its DOTS, Stop TB, and other programs, it estimates that 37 percent of TB cases and up to 96 percent of MDR-TB cases continue to be treated improperly.3

New Alternatives on the Horizon
The good news is that there have been a number of recent breakthroughs in this area. For example, international screening programs in high-risk countries combined with a new technique for more sensitive detection may help stem TB rates among new immigrants to the U.S.4 On the treatment front, some new drugs are showing promise in fighting drug-resistant TB:

- Drugs used for Parkinson’s disease have been identified by computer models and lab tests to offer potential against XDR-TB. The drugs, entacapone (Comtan) and tolcapone (Tasmar), block the brain chemical COMT and target the TB enzyme inhA. Of the two, Comtan is more suitable, as it does not damage the liver. Further studies are required to pursue this finding.5

- TMC207, a new drug from Tibotec Pharmaceuticals, a subsidiary of Johnson & Johnson, attacks the activity of the enzyme ATP synthase, but only in TB bacteria. The drug has shown success in the first of several planned trials.6

- The Albert Einstein College of Medicine and the National Institute of Allergy and Infectious Diseases (NIAID) teamed up to test a combination of old school beta-lactam antibiotics, meropenem and clavulanate in the lab. They found the drugs work in tandem to inhibit both TB and 13 strains of XDR-TB. These initial findings have generated excitement and plans for subsequent trials with TB patients in South Korea and South Africa.7

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3 WHO, Global Tuberculosis Control.
6 Edelson, “Two Ways to Tackle Tuberculosis.”
Pandemic Flu Déjà Vu
A look back at the 1976 influenza outbreak

This is not the first time that the swine flu has dominated the public health scene. A form of the virus kicked off the Spanish flu pandemic in 1918, emerging with a virulence that killed more than 40 million people worldwide. So when the swine flu virus reappeared in 1976, the U.S. government was determined to act quickly and deal with what it viewed as a major threat to the American public. Amid predictions that one million U.S. citizens might die in the 1976 pandemic, President Gerald Ford enacted the National Influenza Immunization Program (NIIP), with the goal of mass immunization of more than 80 percent of the population. Though production of that year’s flu vaccine had just been completed and the vaccine was not yet tested, the government moved forward with its aggressive immunization plans.

Within 10 weeks, 45 million people were immunized. But problems began to appear in the form of paralysis and death related to Guillain-Barre syndrome. Although there was no real proof that the vaccine had caused these serious reactions, the damage was done. Two months later, the public program ended, the anticipated flu pandemic never transpired, and only 33 percent of the population had been immunized. However, the outbreak did result in many future improvements in influenza vaccines.

As the fall flu season commences, many of those immunized during the 1976 outbreak are expected to show immunity to today’s novel H1N1 influenza virus. In addition, continued safe protocols for vaccine testing and administration should ensure that we continue to benefit from the lessons learned during the 1976 influenza outbreak.

2 http://www.cdc.gov/ncidod/eid/vol12no01/pdfs/05-0979.pdf