



# What You Need to Know About H1N1 Flu (Swine Flu)

## *How to Keep Your Students and Staff Healthy*



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**I**nfluenza, commonly known as the flu, is a rapidly mutating infectious disease caused by the RNA Orthomyxoviridae family of viruses that typically affect birds and mammals.

The various strains affect millions of people worldwide. In the U.S., approximately 5 percent to 20 percent of the population gets the flu each year. Of those infected, more than 200,000 are hospitalized with complications, 10 percent of whom are children under the age of 5 years. Approximately 36,000 people die from the flu yearly.<sup>1</sup>

The peak flu season varies throughout the world. In the Northern Hemisphere, it is between December and March; in the Southern Hemisphere, between April and September, with different strains reported in different demographics. Influenza A (H1 and H3) and B viruses circulated throughout the world from May 20 to September 15, 2007. Influenza A (H3) led to flu outbreaks in various countries throughout Asia, Europe, and North America. Influenza A (H1) was reported at low levels in many parts of the world; with A (H3) more commonly reported. Countries in Africa, Asia, Europe, and South



America were affected by Influenza A (H1).<sup>2</sup>

The purpose of this article is to provide an update on the seasonal flu, to inform teachers and administrators about the new H1N1 influenza (also known as “swine flu”) that has recently hit the U.S. and other parts of the world, and to suggest simple measures that will help keep the school and home influenza-free.

### **How Is Influenza Spread?**

Influenza is an airborne disease that is primarily transmitted when people cough or sneeze droplets containing the virus into the air. Bird droppings, saliva, nasal secretions, blood, and feces can also transmit the virus. Sometimes people become infected by touching some-

thing with live flu viruses on it (such as a doorknob, faucet, telephone, computer keyboard, etc.) and then touching their eyes, mouth, or nose. “Studies have shown that the influenza virus can survive on environmental surfaces and can infect a person for 2 to 8 hours after being deposited on the surface.”<sup>3</sup> Hard surfaces such as metal and glass are more likely to harbor the virus than soft surfaces like cloth.



*Influenza is an airborne disease that is primarily transmitted through coughing and sneezing respiratory droplets containing the virus.*

Influenza spreads around the world in seasonal epidemics, which may develop into pandemics. Three 20th-century flu pandemics killed millions of people. New strains of flu appear when an existing flu virus spreads to humans from animals, or when an existing human strain picks up new genes from a virus that usually infects birds or pigs. In the 1990s, an avian strain named H5N1, which hit portions of Asia, raised fears about a new influenza pandemic, but fortunately it did not evolve into a type that spread readily from person to person.<sup>4</sup>

The genetic make-up of Influenza Types A and B are ever changing, producing local outbreaks every two to three years and global outbreaks every 10 to 20 years because younger people have not developed immunity to the mutated viruses.<sup>5</sup> As a result, new flu vaccines must be developed each year. H1N1 is sufficiently different from the seasonal flu that a separate vaccine has been developed for it.

Vaccinations against influenza are usually given to people in industrialized countries<sup>6</sup> and to farmed poultry.<sup>7</sup> Human flu vaccine is administered in two ways—injection and nasal spray. The injected version, trivalent influenza vaccine (TIV),

contains purified and inactivated material from three viral strains; while the nasal spray (FluMist) contains live flu virus. Both methods of immunization are available for protection against seasonal and H1N1 flu. People needing two doses of either type of vaccine should stick to the same form of inoculation. Pregnant women, children under age 2, and people over age 49, as well as those with an underlying condition like heart disease, asthma, or a compromised immune system should not get the spray vaccine. It is not advisable for people being immunized for both regular flu and H1N1 flu to receive the live virus form of both at the same time.<sup>8</sup>



Because of the potential for serious illness and even death from influenza, surveillance systems have been developed to monitor the disease throughout the world. Clinicians in the U.S. report to the Centers for Disease Control and Prevention (CDC). The World Health Organization (WHO) maintains information on the global nature of the disease and posts weekly reports for countries on its Web surveillance page called FluNet.<sup>9</sup>

### **The Signs and Symptoms of Influenza**

Parents and teachers must be aware of the signs and symptoms of all types of influenza and act decisively to prevent outbreaks in schools. These include fever (usually high), headache, sore throat, dry cough, body aches, and runny and/or stuffy nose. Gastrointestinal symptoms such as nausea, vomiting, and diarrhea are particularly common among children, and must be carefully monitored because the same symptoms can be caused by bacterial infections that require immediate treatment. Influenza can cause serious illness and even death, as well as potentially life-threatening complica-





tions such as dehydration, asthma, sinus and ear infections, pneumonia, and aggravation of seemingly unrelated medical conditions like asthma, diabetes, and congestive heart disease.<sup>10</sup>

### How Can the Flu Virus Be Destroyed?

Influenza viruses can be inactivated by heat (167-212°F [75-100°C]); several chemical germicides, including chlorine; hydrogen peroxide; detergents (soap); iodine-based antiseptics; and alcohol.<sup>11</sup>

An easy and effective way to kill flu germs and prevent the spread of all types of flu (and many other diseases) is frequent hand washing using proper techniques (wash with soap for at least 15-20 seconds—the approximate time it takes to sing two rounds of “The ABC Song” or “Happy Birthday”). Hand washing in all of the following circumstances will help stop

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germs dead in their tracks:<sup>12</sup>

- before eating
- after using the toilet and/or visiting the bathroom
- after coughing and sneezing
- after touching animals or animal waste
- before and after touching a sick person
- after changing a diaper
- before inserting or removing contact lenses
- before and after preparing

food

- after handling the garbage
- before and after treating a cut or a wound

### Novel A H1N1 Flu (Swine Flu)

A new flu virus, thought to have originated in swine, appeared in Mexico and then in the United States in March and April of 2009, is spreading rapidly through the United States. The CDC warns that this virus is very contagious and is readily transmitted from human to human. The symptoms of H1N1 flu are very similar to those of Influenza A and B, making it difficult to differentiate from regular seasonal flu. A significant number of people, however, have reported nausea, vomiting, a dry cough, sore throat, and/or a high temperature (exceeding 100 degrees Fahrenheit [38 degrees Celsius]). Experts agree that identifying the strain of flu is less

## Warning Signs That Require Immediate Medical Attention:

### In Children

- Difficult, labored, and/or rapid breathing
- Not waking up, or not interacting
- Flu-like symptoms improve, but then return with fever and a worsening cough
- Severe or persistent vomiting causing dehydration
- Not drinking enough fluids
- Grayish or gray skin color
- Child is irritable and does not want to be held

### In Adults

- Difficulty breathing, rapid breathing, or shortness of breath
- Chest pain or pressure in the chest or abdomen
- Sudden dizziness
- Flu-like symptoms improve, but then return with fever and a worsening cough
- Persistent vomiting
- Confusion

Source: CDC, “What to Do If You Get Sick: 2009 H1N1 and Seasonal Flu”: <http://www.cdc.gov/h1n1flu/sick.htm>. Retrieved September 1, 2009.

important than isolating those with symptoms and providing early treatment, including medical attention, if symptoms worsen. Some physicians will choose to test for the swine flu. Others may not. This depends on the severity and duration of symptoms. Nevertheless, they are giving people in high-risk groups special attention.<sup>13</sup>

### Preventing Infection

There are numerous things that teachers, school personnel, and parents can do to avoid and prevent the spread of the flu. Number one, “self-protect” and “isolate sick children.” Contact with children is the number one risk factor for adults to become ill. Children frequently put things into their mouths, and share food, drinks, toys, kisses, and hugs—thereby swapping bodily fluids indiscriminately and infecting one another and adults. Instruct chil-



dren not to share food, drinks, utensils, and other things that can transmit disease.

Vaccinations are the chief means of keeping children and adults safe during the flu season. A vaccine is already available to combat the seasonal flu, and a vaccine for combating the H1N1 influenza should be available by the time this article is printed. The CDC recommends that individuals in high-risk groups receive both the regular seasonal flu vaccination and the H1N1 vaccine. Experts are afraid that many people

may think that one shot will protect them against both types of flu, or that they need only the immunization for swine flu.

People who should definitely be immunized for H1N1 and seasonal flu include the following high-risk groups: individuals over the age of 65, children under the age of 5, pregnant women, health-care workers (including students and faculty) who come into contact with sick people, people with chronic medical conditions (diabetes, asthma, heart disease, etc), and those with compromised immune systems (i.e., HIV-infected individuals, and people taking immunosuppressive medications, etc.). About 70 percent of the cases of H1N1 flu are



Copy this and distribute to everyone at school.

## Help Stop the Flu - Helpful Hints

### 1. Protect Others and Protect Self.

2. Go home immediately at the first sign of flu symptoms.
3. Avoid close contact with sick people. Wear a mask and keep your distance if you are sick.
4. Stay home or away from other people when you are sick: no shopping, social events, public gatherings, work, church, or school.
5. Avoid contact with other people for at least 24 hours after the fever stays down without the aid of fever-reducing medication.
6. Cover your mouth and nose with a tissue when coughing or sneezing to keep from spreading the virus. Immediately discard tissues in a covered container. Or better yet, cough and sneeze into a bent arm, or into clothing.
7. Wash your hands frequently with soap and water, especially after coughing or sneezing.
8. Carry alcohol-based hand sanitizer with you, and use it frequently when you do not have access to soap and water.
9. Avoid touching your eyes, nose, or mouth to keep from contaminating yourself and others.
10. Practice other good health habits: get plenty of sleep, drink lots of water, be physically active, and eat nutritious foods.

Source: CDC, “H1N1 Flu, What to Do If You Get Flu-Like Symptoms” (2009): <http://www.cdc.gov/h1n1flu/sick.htm>. Retrieved September 1, 2009; CDC, “Preventing the Flu: Good Health Habits Can Help Stop Germs” (2009): <http://www.cdc.gov/flu/protect/habits.htm>. Both retrieved September 21, 2009.



occurring among people in one of these high-risk groups.<sup>14</sup> Young people under the age of 25 seem to be more vulnerable than older adults, and are one of the key groups recom-

mended by the CDC's Advisory Committee on Immunization Information (ACIP) to receive the 2009 H1N1 flu vaccine.<sup>15</sup> Anyone with flu symptoms should stay home to avoid fur-

### Guidelines for Flu Prevention and Control (K-12)

Schools should take extra precautions to contain illnesses and prevent their spread with enforceable school policies and plans in place about how to notify parents should an outbreak occur, such as the Internet, public radio, local cable access, etc.

Adhere to public health advice regarding school closures in your area. Note: Federal guidelines encourage closing schools as the last resort, but if your school serves high-risk students who are medically fragile or pregnant, the CDC encourages selective school dismissal during the high-peak flu season, or during flu breakouts.

At minimum, the school's policy should include the following:

- Allow adequate sick leave time.
- Set up a procedure to screen students and staff for fever and other flu symptoms.
- Encourage early treatment for persistent symptoms.
- Encourage high-risk students and staff to stay home when flu outbreaks occur.
- Require teachers and staff to stay home until they are well.
- Maintain an up-to-date list of substitute teachers.
- Require parents to keep sick children at home.
- Quarantine sick children until their parents can pick them up.
- Send school staff home immediately if they have flu symptoms.
- People with sick families should be encouraged to stay home.
- Encourage parents to find caretakers for their children before the need arises.
- Require all children and staff to have up-to-date immunizations.
- Grant sick children and staff excused absences, which do not require a physician's letter, but recommend that they stay home until they are fever-free, without medication, for 48 hours.
  - Institute school-wide protocols for children to make up schoolwork during their absence, such as mailing assignments home, posting them on the Internet, etc.
  - Provide surgical masks for use in every classroom.
  - Keep on hand (and distribute as needed): large supplies of Tylenol, Advil, fever thermometers, surgical masks, and hand sanitizer.
    - Implement environmental control procedures: i.e., routinely cleaning shared areas and surfaces with proven germ-killing cleaning agents, providing tissues, hand sanitizers, trash containers for all to use, increasing the distance between students in the classroom (i.e., desks farther apart, and not conducting student assemblies where large numbers of students and staff are in close contact).
    - Throughout the school, and in dormitories, put up posters describing safe ways of coughing and sneezing, and other means of preventing the spread of contagious diseases.
    - Hold a school assembly on the topic: **"How to Maintain a Healthy Environment Free of the Flu Bug,"** and advise parents who have questions about the effectiveness or safety of influenza vaccines to consult their physician and the Centers for Disease Control and Prevention Website: [http://www.cdc.gov/h1n1flu/vaccination/safety\\_planning.htm](http://www.cdc.gov/h1n1flu/vaccination/safety_planning.htm) or <http://www.cdc.gov/vaccinesafety/basic/faq.htm>.



Source: CDC, "Guidelines for State and Local Public Health Officials and School Administration for Schools (K-12) Responses to Influenza During the 2009-2010 School Year": <http://www.cdc.gov/h1n1flu/schools/schoolguidance.htm>. Retrieved September 4, 2009.

ther spread of the virus. As soon as a teacher recognizes the symptoms in a student, the child should be isolated from the rest of the school population and required to wear a surgical mask, and the parent or guardian should be notified to immediately escort the child home, also wearing a surgical mask.<sup>16</sup>

How long teachers and other school personnel should stay home and/or require children to remain out of school will vary. People infected with flu virus are usually contagious for five to seven days, starting one day before the symptoms appear. Thus, staying home for up to a week or longer is a

sensible approach for containing the virus. Adults and children should be fever-free, without the aid of medication, for at least two days (48 hours) and cough-free before returning to school.

Not everyone with the flu will get a fever. The absence of a fever does not mean that the individual does not have the flu or is not contagious, so in the beginning stages of the illness, people with other flu symptoms should stay at home (self-isolate). Everyone, infected or not, should cover his or her mouth and nose with a tissue when coughing or sneezing. Other

## Guidelines for Boarding Academies, Colleges, and Other Residential Institutions

- Encourage students, teachers, and staff to be immunized against the seasonal flu and the H1N1 flu by ensuring that vaccinations are readily available. Make the same opportunities available for **substitute teachers and staff**.
- Review and revise as needed policies for missed classes, making up missed exams, classwork, and late assignments, thus preventing students from taking the risk of attending school while ill.
- Review and revise as needed **sick leave policies for faculty and staff** that might make it difficult for them to stay home when sick, or taking time off for taking care of sick family members.
- **Residential students** with flu-like symptoms who live relatively close to campus should go home to keep from making others sick. Encourage them to choose a method of travel that will expose as few people as possible to the virus. For example, travel by private car or taxi would be preferable over use of public transportation (subway, buses, etc), and they should wear a surgical mask, which should be in plentiful supply on campus.
- **Students occupying a private room** should remain in their room and receive care and meals from a single person. Schools can assign “flu buddies” so that students pair up to care for each other if one or the other gets sick.
- For students who cannot leave campus and who do not have private rooms, institutions should provide temporary or alternate **housing (quarantine) for sick students** until 48 hours after they are fever-free.
- Staff members should make daily contact by e-mail, text messaging, phone calls, or other methods with each student, teacher, and staff member who has been quarantined or who is recovering at home.
- Keep on hand a generous supply of **alcohol swabs/wipes** available and encourage everyone to use them in commonly used areas on campus by routinely wiping down surfaces such as desks, doorknobs, and in shared equipment in computer labs (keyboards, mouse, etc.), and other shared surfaces, items, and areas.
- Keep on hand a generous supply of Tylenol, Advil, fever thermometers, surgical masks, and hand sanitizer.
- Hands are the primary tool for transmitting viruses and bacteria. Thus, frequent hand washing should be encouraged. Where this is not practical, hand sanitizers should be made available for all.
- In school settings, it is nearly impossible to avoid being in close contact with others, thus each classroom and dormitory should have surgical masks available for sick students to wear until they can be isolated.
- Emphasize to all that kissing, sharing eating or drinking utensils, drinks, food, or any other contact between persons is likely to result in exposure to infected respiratory droplets.
- Encourage students and staff with flu-like symptoms to seek medical care immediately if they have a medical condition that puts them at increased risk of severe illness from the flu, or develop severe symptoms such as increased fever, shortness of breath, chest pain or pressure, or rapid breathing.

Source: CDC, “Guidelines for Responses to Influenza for Institutions of High Education During the 2009-2010 Academic Year”: <http://www.cdc.gov/h1n1flu/vaccination> (2009).



effective methods are coughing or sneezing into a blouse, shirt, or sleeve. When visiting the doctor or school nurse's office, people with flu symptoms should wear a surgical mask.<sup>17</sup>

### Prevention Strategies

Elementary and secondary schools (K-12) probably will be hit hard with both seasonal and H1N1 flu outbreaks this year, so administrators should be prepared. The recommendations provided in the table on page 26 offer guidelines that can be adapted to safeguard your students, teachers, staff, and the community. Don't forget to include parents in the planning process, so that they are aware of the school's preventive measures.

Colleges/universities and other residential institutions are going to be the hardest hit this year by the H1N1 influenza because they have large numbers of young people in close, sustained contact. Already, during the first two weeks of fall quarter 2009, 165 colleges that have been tracking the H1N1 influenza reported that 1,640 people have been infected with the H1N1 virus.<sup>18</sup> Many schools are not testing to identify the strain of flu virus, so the total may be much higher. See the chart on page 27 for recommended policies.



### Treatment of H1N1 Flu

Most of the people infected with this virus will recover without needing medical care. Home remedies are a reasonable approach for treating both H1N1 flu and regular seasonal flu: getting plenty of rest, drinking lots of fluids, taking fever-reducing medications, and isolation from others. However, it is not advisable to give aspirin or other aspirin-containing medications (e.g., Advil, Pepto-Bismol, bismuth subsalicylate, etc.) to anyone under the age of 18 due to the risk of Reye's Syndrome. Also, since this is a new virus, with so many un-known features, it is important that people do not let the symptoms continue indefinitely or progressively worsen

without seeking medical attention. There are antiviral drugs available to treat those who become seriously ill, with neuraminidase inhibitors being particularly effective.<sup>19</sup>

### Summary

The CDC and the WHO are monitoring the flu epidemics and pandemics carefully, keeping a particularly close eye on the H1N1 virus to support the public health responders and to keep the public updated. The best defense is prevention,

## Resources for Schools

<http://www.flu.gov>

CDC Flu Information Hotline (English and Spanish) at:  
800-CDC-INFO (800) 232-4636  
800-232-6348 (TTY)

CDC Resources: <http://www.cdc.gov/flu>

- Seasonal Flu Information for Schools & Childcare Providers
- About the Flu: Questions & Answers
- Persons for Whom Annual Vaccination Is Recommended
- Persons Who Should Not Be Vaccinated
- CDC YouTube Video: Symptoms of Swine Flu

CDC's Flu Website:

- "Key Facts About Seasonal Flu": <http://www.cdc.gov/flu/keyfacts.htm>
- "The Flu: A Guide for Parents": <http://www.cdc.gov/flu/school/index.htm>
- "Information About the Flu Shot and the Nasal Spray Vaccine": <http://www.cdc.gov/flu/about/qa/flu vaccine.htm>

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For more information about treating the flu and the ban on aspirin for children: [http://www.cdc.gov/h1n1flu/guidance\\_homecare.htm](http://www.cdc.gov/h1n1flu/guidance_homecare.htm).

which makes intervention (health care) unnecessary.

Decisions about whether to recommend that school personnel, parents, and students be vaccinated should be based on the school's geographical location and specific public health guidelines and warnings.

### School Policies

If school administrators have not done so already, they should develop or revise policies relating to sickness and absences. Make sure that everyone understands the rules and how to enforce them. Do not penalize teachers and children for going home when ill and for staying there until they recover. In addition, parents should be discouraged from sending sick children to school. Schools will need to develop a pool of substitute teachers to enable teachers who are ill to stay home until they are well. Sick students at residential institutions should be isolated (quarantined). Planning ahead can save lives, maintain a healthy school environment, decrease the spread of the flu, and prevent its complications. ✍



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