Environmental Health Bulletin *May 1, 2009*

Swine Flu (H1N1)

As we are all aware, the global community is in the midst of managing an outbreak of a new influenza of swine origin. Forensic Analytical Consulting Services (FACS) has prepared this bulletin to help our clients, business partners and members of our community navigate through the maze of information available in order to stay well-informed and prepared for contingencies.

How do I keep up to date on the latest information and advisories?

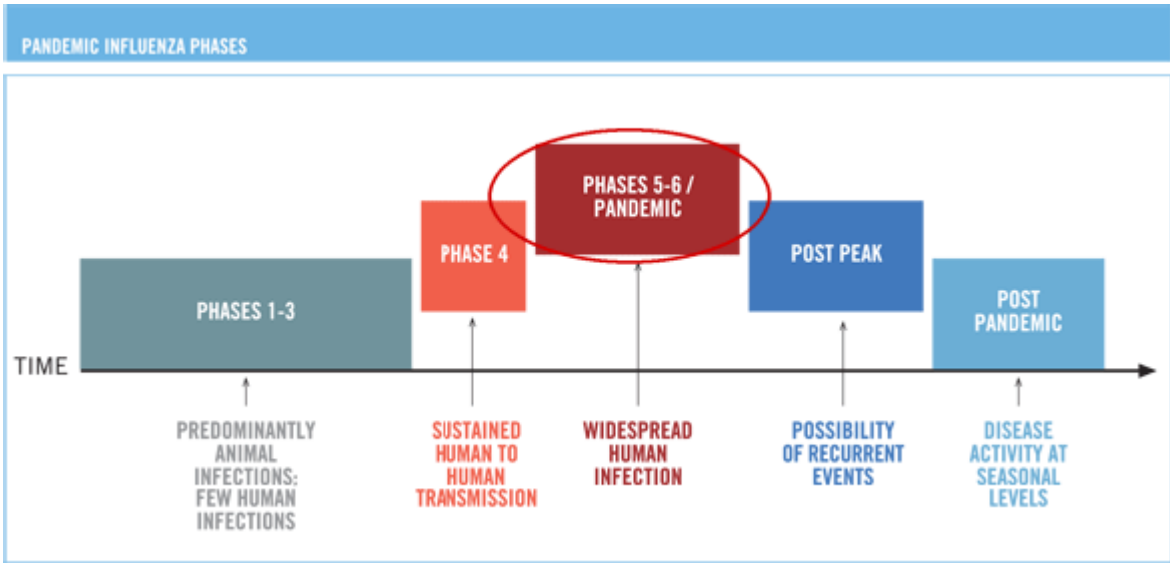
1) The United States Centers for Disease Control (CDC): http://www.cdc.gov/swineflu/.

2) The World Health Organization (WHO): http://www.who.int/csr/disease/swineflu/en/

These websites are continually updated with the latest information and support resources. A quick perusal of the CDC site will reveal guidelines for specific audiences as well (e.g., schools, pregnant women). Your local public health agencies (e.g., county, state) should also be consulted for information and advisories specific to your community. General information regarding swine flu taken from the CDC website is attached (note: this document may be updated).

I hear about "pandemic alert phases", what do these mean?

The WHO has developed a six-phase approach to managing pandemic flu (see graphic below). As the outbreak progresses through the different phases to its peak, we can expect our health agencies to place greater restrictions on travel and person-to-person contact as appropriate to manage the situation. Further information from the WHO website regarding each phase is attached.



What should I do as an employer?

1) Stay informed and communicate with employees regarding the latest information and advisories.

2) Continually evaluate risks to employees and customers and implement appropriate controls as conditions change. This may include modifying stay at home policies, travel plans, customer interface procedures, disinfection measures, personal protective equipment use and more.

3) Be prepared for potentially significant business disruption from greater absenteeism, changes in commerce patterns, supply chain impacts and more.

The United States Occupational Safety and Health Administration (OSHA) publication "Guidance on Preparing Workplaces for an Influenza Pandemic" is an excellent resource to help employers prepare for and successfully manage a crisis (http://www.osha.gov/Publications/influenza_pandemic.html).

What about disinfecting surfaces?

First and foremost, wash your hands thoroughly and frequently. Flu viruses typically survive for minutes to hours on environmental surfaces, but may last longer under the right conditions. During a pandemic flu event, it may be prudent to implement an enhanced cleaning policy for commonly touched surfaces such as stairway railings, elevator buttons and door handles. These surfaces can be cleaned by wiping them down with a detergent-based cleaner or household disinfectant according to directions on the product label. More specific infection control measures for managing infected individuals in the home and other settings is available on the CDC website.

Should I wear a facemask or respirator?

The first steps in personal infection control should be thorough and frequent hand washing and avoiding close contact (less than 6 feet) with symptomatic or infected persons. There is little information developed regarding the effectiveness of facemasks or respirators in controlling the spread of influenza in community settings. However, it is reasonable to assume that the proper use of facemasks or respirators may offer some degree of additional protection. The CDC has provided interim recommendations on the use of facemasks and respirators with respect to the current swine flu event. A copy from the CDC website is attached (note: this document may be updated).

What can FACS do to help?

FACS's team of Certified Industrial Hygienists (CIHs) and environmental health professionals are available to help evaluate exposure risks and develop and implement control programs. This may include developing procedures, providing training & education, making equipment & supply recommendations, fit-testing respirators and in some instances post-cleaning assessments.

"The solution is in the FACS."

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H1N1 Flu

QUESTIONS & ANSWERS

Swine Influenza and You

Swine Flu website last updated April 29, 2009, 10:55 PM ET

What is swine flu?
Swine Influenza (swine flu) is a respiratory disease of pigs caused by type A influenza viruses that causes regular outbreaks in pigs. People do not normally get swine flu, but human infections can and do happen. Swine flu viruses have been reported to spread from person-to-person, but in the past, this transmission was limited and not sustained beyond three people.

Are there human infections with swine flu in the U.S.?
In late March and early April 2009, cases of human infection with swine influenza A (H1N1) viruses were first reported in Southern California and near Guadalupe County, Texas. Other U.S. states have reported cases of swine flu infection in humans and cases have been reported internationally as well. An updated case count of confirmed swine flu infections in the United States is kept at http://www.cdc.gov/swineflu/investigation.htm CDC and local and state health agencies are working together to investigate this situation.

Is this swine flu virus contagious?
CDC has determined that this swine influenza A (H1N1) virus is contagious and is spreading from human to human. However, at this time, it is not known how easily the virus spreads between people.

What are the signs and symptoms of swine flu in people?
The symptoms of swine flu in people are similar to the symptoms of regular human flu and include fever, cough, sore throat, body aches, headache, chills and fatigue. Some people have reported diarrhea and vomiting associated with swine flu. In the past, severe illness (pneumonia and respiratory failure) and deaths have been reported with swine flu infection in people. Like seasonal flu, swine flu may cause a worsening of underlying chronic medical conditions.

How does swine flu spread?
Spread of this swine influenza A (H1N1) virus is thought to be happening in the same way that seasonal flu spreads. Flu viruses are spread mainly from person to person through coughing or sneezing of people with influenza. Sometimes people may become infected by touching something with flu viruses on it and then touching their mouth or nose.

Can I get swine influenza from eating or preparing pork?
No. Swine influenza viruses are not spread by food. You cannot get swine influenza from eating pork or pork products. Eating properly handled and cooked pork products is safe.

How can someone with the flu infect someone else?
Infected people may be able to infect others beginning 1 day before symptoms develop and up to 7 or more days after becoming sick. That means that you may be able to pass on the flu to someone else before you know you are sick, as well as while you are sick.

What should I do to keep from getting the flu?
First and most important: wash your hands. Try to stay in good general health. Get plenty of sleep, be physically active, manage your stress, drink plenty of fluids, and eat nutritious food. Try not touch surfaces that may be contaminated with the flu virus. Avoid close contact with people who are sick.

Are there medicines to treat swine flu?
Yes. CDC recommends the use of oseltamivir or zanamivir for the treatment and/or prevention of infection with these swine influenza viruses. Antiviral drugs are prescription medicines (pills, liquid or an inhaler) that fight against the flu by keeping flu viruses from reproducing in your body. If you get sick, antiviral drugs can make your illness milder and make you feel better faster. They may also prevent serious flu complications. For treatment, antiviral drugs work best if started soon after getting sick (within 2 days of symptoms).

How long can an infected person spread swine flu to others?
People with swine influenza virus infection should be considered potentially contagious as long as they are symptomatic and possible for up to 7 days following illness onset. Children, especially younger children, might potentially be contagious for longer periods.

What surfaces are most likely to be sources of contamination?
Germs can be spread when a person touches something that is contaminated with germs and then touches his or her eyes, nose, or mouth. Droplets from a cough or sneeze of an infected person move through the air. Germs can be spread when a person touches respiratory droplets from another person on a surface like a desk and then touches their own eyes, mouth or nose before washing their hands.

How long can viruses live outside the body?
We know that some viruses and bacteria can live 2 hours or longer on surfaces like cafeteria tables, doorknobs, and desks. Frequent handwashing will help you reduce the chance of getting contamination from these common surfaces.

What can I do to protect myself from getting sick?
There is no vaccine available right now to protect against swine flu. There are everyday actions that can help prevent the spread of germs that cause respiratory illnesses like influenza. Take these everyday steps to protect your health:

- Cover your nose and mouth with a tissue when you cough or sneeze. Throw the tissue in the trash after you use it.
- Wash your hands often with soap and water, especially after you cough or sneeze. Alcohol-based hand cleaners are also effective.
- Avoid touching your eyes, nose or mouth. Germs spread this way.
- Try to avoid close contact with sick people.
- If you get sick with influenza, CDC recommends that you stay home from work or school and limit contact with others to keep from infecting them.

What is the best way to keep from spreading the virus through coughing or sneezing?
If you are sick, limit your contact with other people as much as possible. Do not go to work or school if ill. Cover your mouth and nose with a tissue when coughing or sneezing. It may prevent those around you from getting sick. Put your used tissue in the waste basket. Cover your cough or sneeze if you do not have a tissue. Then, clean your hands, and do so every time you cough or sneeze.

What is the best technique for washing my hands to avoid getting the flu?
Washing your hands often will help protect you from germs. Wash with soap and water or clean with alcohol-based hand cleaner. We recommend that when you wash your hands -- with soap and warm water -- that you wash for 15 to 20 seconds. When soap and water are not available, alcohol-based disposable hand wipes or gel sanitizers may be used. You can find them in most supermarkets and drugstores. If using gel, rub your hands until the gel is dry. The gel doesn't need water to work; the alcohol in it kills the germs on your hands.

What should I do if I get sick?
If you live in areas where swine influenza cases have been identified and become ill with influenza-like symptoms, including fever, body aches, runny nose, sore throat, nausea, or vomiting or diarrhea, you may want to contact their health care provider, particularly if you are worried about your symptoms. Your health care provider will determine whether influenza testing or treatment is needed.

If you are sick, you should stay home and avoid contact with other people as much as possible to keep from spreading your illness to others.

If you become ill and experience any of the following warning signs, seek emergency medical care.

In children emergency warning signs that need urgent medical attention include:

- Fast breathing or trouble breathing
- Bluish skin color
- Not drinking enough fluids
- Not waking up or not interacting
- Being so irritable that the child does not want to be held
- Flu-like symptoms improve but then return with fever and worse cough
- Fever with a rash

In adults, emergency warning signs that need urgent medical attention include:

- Difficulty breathing or shortness of breath
- Pain or pressure in the chest or abdomen
- Sudden dizziness
- Confusion

- Severe or persistent vomiting

How serious is swine flu infection?
Like seasonal flu, swine flu in humans can vary in severity from mild to severe. Between 2005 until January 2009, 12 human cases of swine flu were detected in the U.S. with no deaths occurring. However, swine flu infection can be serious. In September 1988, a previously healthy 32-year-old pregnant woman in Wisconsin was hospitalized for pneumonia after being infected with swine flu and died 8 days later. A swine flu outbreak in Fort Dix, New Jersey occurred in 1976 that caused more than 200 cases with serious illness in several people and one death.

What is CDC doing in response to the outbreak? April 29, 2009, 10:55 PM ET
CDC has implemented its emergency response. The agency's goals are to reduce transmission and illness severity, and provide information to help health care providers, public health officials and the public address the challenges posed by the new virus. CDC continues to issue new interim guidance for clinicians and public health professionals. In addition, CDC's Division of the Strategic National Stockpile (SNS) continues to send antiviral drugs, personal protective equipment, and respiratory protection devices to all 50 states and U.S. territories to help them respond to the outbreak.

What epidemiological investigations are taking place in response to the recent outbreak?
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CDC works very closely with state and local officials in areas where human cases of H1N1 (swine flu) infections have been identified. In California and Texas, where EpiAid teams have been deployed, many epidemiological activities are taking place or planned including:

- Active surveillance in the counties where infections in humans have been identified;
- Studies of health care workers who were exposed to patients infected with the virus to see if they became infected;
- Studies of households and other contacts of people who were confirmed to have been infected to see if they became infected;
- Study of a public high school where three confirmed human cases of influenza A (H1N1) of swine origin occurred to see if anyone became infected and how much contact they had with a confirmed case; and
- Study to see how long a person with the virus infection sheds the virus.
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World Health Organization

Current WHO phase of pandemic alert

Current phase of alert in the WHO global influenza preparedness plan

Pandemic preparedness

In the 2009 revision of the phase descriptions, WHO has retained the use of a six-phased approach for easy incorporation of new recommendations and approaches into existing national preparedness and response plans. The grouping and description of pandemic phases have been revised to make them easier to understand, more precise, and based upon observable phenomena. Phases 1–3 correlate with preparedness, including capacity development and response planning activities, while Phases 4–6 clearly signal the need for response and mitigation efforts. Furthermore, periods after the first pandemic wave are elaborated to facilitate post pandemic recovery activities.

The current WHO phase of pandemic alert is 5.

In nature, influenza viruses circulate continuously among animals, especially birds. Even though such viruses might theoretically develop into pandemic viruses, in **Phase 1** no viruses circulating among animals have been reported to cause infections in humans.

In **Phase 2** an animal influenza virus circulating among domesticated or wild animals is known to have caused infection in humans, and is therefore considered a potential pandemic threat.

In **Phase 3**, an animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks. Limited human-to-human transmission may occur under some circumstances, for example, when there is close contact between an infected person and an unprotected caregiver. However, limited transmission under such restricted circumstances does not indicate that the virus has gained the level of transmissibility among humans necessary to cause a pandemic.

Phase 4 is characterized by verified human-to-human transmission of an animal or human-animal influenza reassortant virus able to cause “community-level outbreaks.” The ability to cause sustained disease outbreaks in a community marks a significant upwards shift in the risk for a pandemic. Any country that suspects or has verified such an event should urgently consult with WHO so that the situation can be jointly assessed and a decision made by the affected country if implementation of a rapid pandemic containment operation is warranted. Phase 4 indicates a significant increase in risk of a pandemic but does not necessarily mean that a pandemic is a forgone conclusion.

Phase 5 is characterized by human-to-human spread of the virus into at least two countries in one WHO region. While most countries will not be affected at this stage, the declaration of Phase 5 is a strong signal that a pandemic is imminent and that the time to finalize the organization, communication, and implementation of the planned mitigation measures is short.

Phase 6, the pandemic phase, is characterized by community level outbreaks in at least one other country in a different WHO region in addition to the criteria defined in **Phase 5**. Designation of this phase will indicate that a global pandemic is under way.

During the **post-peak period**, pandemic disease levels in most countries with adequate surveillance will have dropped below peak observed levels. The post-peak period signifies that pandemic activity appears to be decreasing; however, it is uncertain if additional waves will occur and countries will need to be prepared for a second wave.

Previous pandemics have been characterized by waves of activity spread over months. Once the level of disease activity drops, a critical communications task will be to balance this information with the possibility of another wave. Pandemic waves can be separated by months and an immediate “at-ease” signal may be premature.

In the **post-pandemic period**, influenza disease activity will have returned to levels normally seen for seasonal influenza. It is expected that the pandemic virus will behave as a seasonal influenza A virus. At this stage, it is important to maintain surveillance and update pandemic preparedness and response plans accordingly. An intensive phase of recovery and evaluation may be required.

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H1N1 Flu

Interim Recommendations for Facemask and Respirator Use in Certain Community Settings Where Swine Influenza A (H1N1) Virus Transmission Has Been Detected

April 27, 2009 011:00AM ET

This document provides interim guidance and will be updated as needed.

Detailed background information and recommendations regarding the use of masks and respirators in non-occupational community settings can be found on PandemicFlu.gov in the document Interim Public Health Guidance for the Use of Facemasks and Respirators in Non-Occupational Community Settings during an Influenza Pandemic.

Information on the effectiveness of facemasks[1] and respirators[2] for the control of influenza in community settings is extremely limited. Thus, it is difficult to assess their potential effectiveness in controlling swine influenza A (H1N1) virus transmission in these settings. In the absence of clear scientific data, the interim recommendations below have been developed on the basis of public health judgment and the historical use of facemasks and respirators in other settings.

In areas with confirmed human cases of swine influenza A (H1N1) virus infection, the risk for infection can be reduced through a combination of actions. No single action will provide complete protection, but an approach combining the following steps can help decrease the likelihood of transmission. These actions include frequent handwashing, covering coughs, and having ill persons stay home, except to seek medical care, and minimize contact with others in the household.Additional measures that can limit transmission of a new influenza strain include voluntary home quarantine of members of households with confirmed or probable swine influenza cases, reduction of unnecessary social contacts, and avoidance whenever possible of crowded settings.

When it is absolutely necessary to enter a crowded setting or to have close contact[3] with persons who might be ill, the time spent in that setting should be as short as possible. If used correctly, facemasks and respirators may help reduce the risk of getting influenza, but they should be used along with other preventive measures, such as avoiding close contact and maintaining good hand hygiene. A respirator that fits snugly on your face can filter out small particles that can be inhaled around the edges of a facemask, but compared with a facemask it is harder to breathe through a respirator for long periods of time. For more information on facemasks and respirators, visit the CDC Swine Flu website..

When crowded settings or close contact with others cannot be avoided, the use of facemasks[1] or respirators[2] in areas where transmission of swine influenza A (H1N1) virus has been confirmed should be considered as follows:

1. Whenever possible, rather than relying on the use of facemasks or respirators, close contact with people who might be ill and being in crowded settings should be avoided.
2. Facemasks[1] should be considered for use by individuals who enter crowded settings, both to protect their nose and mouth from other people's coughs and to reduce the wearers' likelihood of coughing on others; the time spent in crowded settings should be as short as possible.
3. Respirators[2] should be considered for use by individuals for whom close contact with an infectious person is unavoidable. This can include selected individuals who must care for a sick person (e.g., family member with a respiratory infection) at home.

These interim recommendations will be revised as new information about the use of facemasks and respirators in the current setting becomes available.

For more information about human infection with swine influenza virus, visit the CDC Swine Flu website.

1 Unless otherwise specified, the term "facemasks" refers to disposable masks cleared by the U.S. Food and Drug Administration (FDA) for use as medical devices. This includes facemasks labeled as surgical, dental, medical procedure, isolation, or laser masks. Such

facemasks have several designs. One type is affixed to the head with two ties, conforms to the face with the aid of a flexible adjustment for the nose bridge, and may be flat/pleated or duck-billed in shape. Another type of facemask is pre-molded, adheres to the head with a single elastic band, and has a flexible adjustment for the nose bridge. A third type is flat/pleated and affixes to the head with ear loops. Facemasks cleared by the FDA for use as medical devices have been determined to have specific levels of protection from penetration of blood and body fluids.

2 Unless otherwise specified, "respirator" refers to an N95 or higher filtering facepiece respirator certified by the U.S. National Institute for Occupational Safety and Health (NIOSH).

3 Three feet has often been used by infection control professionals to define close contact and is based on studies of respiratory infections; however, for practical purposes, this distance may range up to 6 feet. The World Health Organization uses "approximately 1 meter"; the U.S. Occupational Safety and Health Administration uses "within 6 feet." For consistency with these estimates, this document defines close contact as a distance of up to 6 feet.

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