



INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS

## Swine-Origin Influenza A (H1N1) Virus (Swine Flu) Pandemic

### Informational Bulletin for Emergency Responders

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### About this document

The following information is provided to assist fire fighters and emergency medical personnel to prepare for a potential influenza pandemic and to advise all first responders with potential influenza exposure to use proper infection control precautions to protect their own health and that of the public. Regardless of an influenza pandemic event, all first responders should receive an influenza vaccine each year to protect themselves, their families and the public they serve.

An influenza pandemic could potentially result in widespread illness and deaths globally. Because all disasters and emergencies are dealt with locally, each local fire and emergency medical department must collaborate with their local government, public health department, and community stakeholders to establish an action plan. A lesson learned from hurricane Katrina and Rita disasters is that preparation for emergencies requires advanced planning if the response is to be effective and efficient.

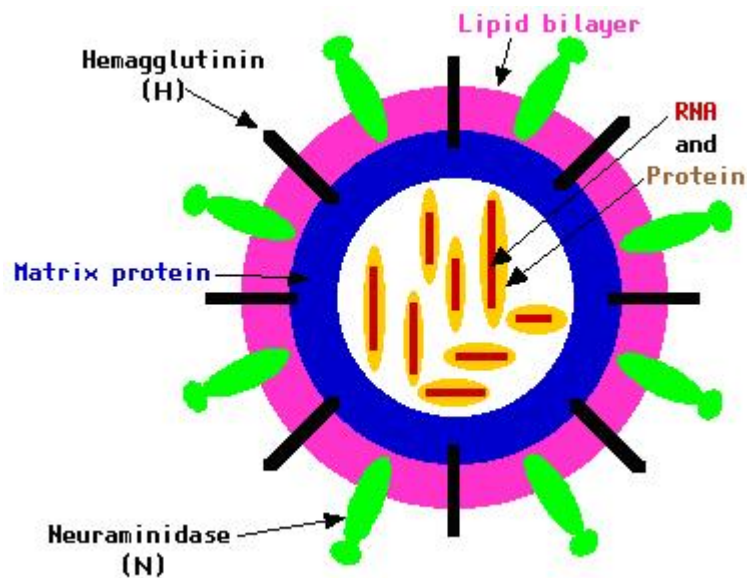
The latest updates on an Influenza Pandemic may be found on: <http://www.pandemicflu.gov/>.

# What is an Influenza Pandemic?

## About Influenza

Influenza (the “flu”) is a seasonal respiratory illness caused by flu viruses. The viruses can cause mild to severe illness sometimes resulting in death. It is important to note that the flu is different from a common cold or seasonal allergies. Generally, the onset of the flu is sudden and symptoms include fever (usually high), headache, chills, sore throat, runny or stuffy nose, dry cough, severe exhaustion, muscle aches and stomach symptoms, such as nausea, vomiting and diarrhea.

The flu season typically starts in late November and lasts through early spring. The flu affects about 30-50 million Americans each year. The flu differs from the common cold in that it lasts longer (about two weeks) and can be temporarily debilitating even in healthy individuals. There are three types of Influenza viruses – A, B, and C. Influenza A is further categorized into subtypes based on the type of two surface proteins – hemagglutinin (H) and neuraminidase (N).



Source: <http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/I/Influenza.html>

## About Influenza Epidemic and Pandemic

*Epidemic* refers to the onset of a disease that occurs in an unusually high number of individuals in a community at the same time and is clearly in excess of normal expectancy in a defined community, geographical area or season. The U.S. Centers for Disease Control (CDC) says “that to epidemiologists the terms ‘epidemic’ and ‘outbreak’ basically mean the same thing.”

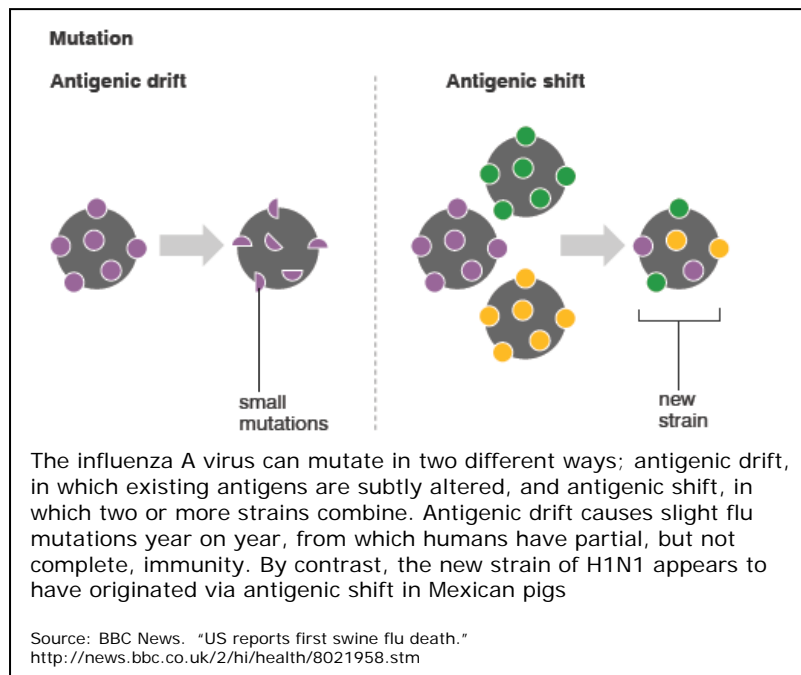
*Pandemic* refers to a widespread, usually global spread of a disease, while an *epidemic* is localized to a geographic region. According to the World Health Organization, “an influenza pandemic occurs when a new influenza virus appears against which the human population has no immunity, resulting in epidemics worldwide with enormous numbers of deaths and illness.”

The World Health Organization (WHO) is coordinating the global response to human cases of swine influenza A (H1N1) and monitoring the corresponding threat of an influenza pandemic. WHO revised the phase descriptions in 2009 and has retained the use of six phases in regards to pandemics to allow for

the incorporation of new recommendations and approaches into existing national preparedness and response plans. Currently the pandemic threat is at Phase 5, which means that a pandemic is imminent.

One way for a new pandemic flu strain to arise is through the mixing of different types of influenza A viruses. For instance, the influenza viruses that caused the Avian Flu and the Hong Kong Flu pandemics are believed to have come from the mixing of human influenza and avian (bird) influenza viruses in another animal such as a pig. The new strain was then able to cause a much more severe illness in humans. The Spanish Flu pandemic, on the other hand, is thought to have started from an avian flu that directly infected humans; the mixing of the avian influenza with the human influenza within a human led to the new deadly strain of influenza A virus.

The current influenza outbreak of swine flu is a result of an influenza virus species that infected pigs, then reassort (swap genes) and the new virus emerging. Currently there are four main influenza type A virus subtypes, but the most recent influenza virus from pigs causing the outbreak have been H1N1 viruses. This new virus that has emerged is a mixture of swine, human and avian influenza viruses.



During the 20th century, new strains of Influenza A viruses resulted in three influenza pandemics:

- **Spanish Flu (1918-1919)** – Influenza H1N1 caused an estimated 20-50 million deaths worldwide and accounted for 675,000 deaths in the United States. The most striking characteristics of the 1918 pandemic were the unusually high death rate among the otherwise healthy age group of 15-34 year olds. Healthy people, as well as those in frail condition, were equally affected, and many died within the first few days after infection.
- **Asian Flu (1957-58)** –Influenza H2N2 started in China in February 1957; by June 1957 it spread to United States, causing 70,000 deaths. The initial outbreak occurred during the summer of 1957 and again during January/February 1958. This is an example of a second wave of infections that can develop during a pandemic.
- **Hong Kong Flu (1968-1969)** – Influenza H3N2 started in Hong Kong in early 1968. Later in the year, it spread to the United States and caused 34,000 deaths. The Hong Kong Flu was the mildest pandemic of the 20th century.

The U.S. Centers for Disease Control and Prevention (CDC), the Public Health Agency of Canada (PHAC) and the World Health Organization (WHO) have a large surveillance system for detecting possible pandemic flu stains around the world. The CDC has activated its emergency operations center to coordinate the agency's emergency response. The goals of the CDC are to reduce transmission and illness severity, and to provide information to health care providers, public health officials and the public to address the current outbreak of the swine influenza virus. WHO is coordinating the global response to

human cases of swine influenza A and is also monitoring the corresponding threat of a pandemic. PHAC is currently working with federal, provincial and international governments to address the swine influenza outbreak.

## **Tests for Influenza (Diagnosis)**

The most common method for diagnosing influenza is the Rapid Flu Test. Depending on the type of test used, it can identify influenza A and B.

Proper sample collection is critical for testing. Because the tests rely on detecting the virus shed in the respiratory secretions of the infected person, the test must be done during the first few days of illness when there is viral shedding. The best sample is a nasal aspirate, but nasopharyngeal swabs are most frequently used. With the patient's head tilted back, a Dacron swab (like a very long Q-tip) is inserted into a nostril until there's resistance (1-2 inches) and then rotated several times.

The major advantages of the Rapid Flu Test are that it can be done in an outpatient setting and the results return within 30 minutes to two hours. The major disadvantages are that true influenza cases will be missed up to 30 percent of the time (false negative result) and some without influenza will be misdiagnosed as having influenza (false positive result).

The gold standard for diagnosing influenza is a viral culture. The virus from the nasal secretion is grown and identified in the laboratory. The advantage of a viral culture is that the specific viral strain and type can be identified. Such detailed information is critical in detecting influenza outbreaks (including surveillance for the pandemic strain) and for developing vaccines. The major disadvantages are that the results take about three to ten days and not all labs are equipped to perform a viral culture.

In response to the current outbreak of swine influenza, the U.S. Food and Drug Administration (FDA) has issued Emergency Use Authorizations (EUAs) at the request of the CDC. The FDA will make available to public health and medical personnel important diagnostic and therapeutic tools to identify and respond to the swine flu virus under certain circumstances. The EUAs are for the use with certain Relenza and Tamiflu antiviral products and for the rRT-PCR Swine Flu Panel diagnostic test.

In authorizing an EUA for the rRT-PCR Swine Flu Panel diagnostic test, the FDA has determined that it may be effective in testing samples from individuals diagnosed with influenza A infections and whose virus subtypes cannot be identified by test that are currently available. This EUA will allow the CDC to distribute the swine flu test to public health and other qualified laboratories that have personnel and equipment trained to perform and interpret the results.

## **Transmission**

Influenza is spread from person-to-person by contact with respiratory secretions from an infected person. When an infected person coughs or sneezes, the viruses are carried in large droplets which settle on the surfaces of the upper respiratory tracts of persons who are nearby (i.e. within three feet of the infected person). The viruses can also spread by direct or indirect contact with respiratory secretions – touching contaminated surfaces and then touching the eyes, nose or mouth.

Influenza is more infectious than SARS. Infected adults can spread the virus from the day before exhibiting symptoms to five days after symptoms start (two days on average); whereas, the transmission timeline for SARS is six to eight days. Infected children can spread the virus for 10 days or longer. Due to the highly contagious nature of influenza virus, first responders who may be exposed to or are taking care of persons suspected of influenza should wear appropriate protection (discussed later in this article).

The swine influenza A (H1N1) virus is likely to be transmitted in the same manner as the seasonal flu spreads. The main transmission of flu viruses from person to person is through coughing or sneezing. Transmission can also occur by touching something with flu viruses on it and then touching the mouth or nose. Persons with swine flu should be considered potentially contagious as long as they are symptomatic and possibly for up to seven days following illness onset. Children, especially younger children, can potentially be contagious for a longer period.

People infected with the swine flu may be able to infect others on day one before symptoms develop and up to seven or more days after becoming sick. This means that you may be able to pass on the flu to someone else before you know you are sick. Viruses and bacteria can live up to two hours or longer on surfaces such as cafeteria tables, doorknobs and desks. Washing hands frequently will help reduce the chance of getting contamination from common surfaces.

One concern with this recent strain of swine influenza A (H1N1) virus is that there is a real threat to persons with seemingly healthy immune systems. The danger is that healthy people have no defenses built up to this influenza virus and causing a healthy immune system to overreact and attack the body's healthy organs and systems – this makes a healthy 15-60 year old individual more likely to succumb to this new virus.

## Treatment and Prevention

**Treatment.** Four antiviral medications are approved by the U.S. Food and Drug Administration (FDA) for treatment and prevention of influenza – Tamiflu (oseltamivir), Relenza (zanamivir), Symmetrel (amantadine) and Flumadine (rimantadine). While antivirals taken at the onset of the illness may decrease the severity and duration of the illness, there is no definitive treatment for influenza. If antiviral treatment is given within 48 hours, it may reduce the severity of symptoms and the duration of illness. Treatment of infected persons does not prevent further spread of infection, but it may reduce the viral shedding and thus the degree of contagion.

Antivirals do not help if given beyond 48 hours of onset and will not work against other viruses or against bacterial infections that may occur as a complication of influenza.

A patient may develop resistance to one or all antivirals. The bird flu (Influenza A H5N1) identified in humans in Asia in 2004 to 2005 is already resistant to amantadine and rimantadine, and higher doses of oseltamivir must be given for a longer period to be effective. Observational studies indicate that early intervention and an extended regime of oseltamivir may help increase the chance of survival, but results are inconclusive due to limited data.

For the swine flu specifically, the CDC recommends the use of Tamiflu (oseltamivir) or Relenza (zanamivir) to treat and prevent infection.

**Prevention.** An effective vaccine could potentially thwart an epidemic before it becomes a pandemic. However, once the potential pandemic strain is identified, it takes several months for the vaccine to be developed and mass produced for wide distribution.

For the current outbreak and imminent pandemic, fire fighters must continue to practice preventive measures, such as respiratory hygiene, cough etiquette and annual flu vaccination. As with all biological hazards, universal precautions should be practiced.

Influenza epidemics result in about 35,000 deaths each year in the United States. Contributing to the high death rate is the inadequate level of vaccination among health care workers who unknowingly transmit the virus to persons susceptible for a serious illness from influenza. Data from several studies indicate that vaccination of health care workers significantly reduces the influenza death rate among the patients for whom they provide care.

Currently there is no vaccine available for this strain of the swine flu. However, there are actions people can take every day to help prevent the spread of germs that cause respiratory illnesses such as influenza. These steps can protect your health:

- Cover your nose and mouth with a tissue when you cough or sneeze. Throw the tissue in the trash.
- Wash your hands often with soap and water, especially after a cough or sneeze. Alcohol-based hand sanitizers are also effective.
- Avoid touching your eyes, nose or mouth.
- Try to avoid close contact with sick people.

- If you get sick with influenza, the CDC recommends that you stay home from work or school and limit contact with others to keep from infecting others.

## How should I prepare?

### Principles of Emergency Preparedness

In preparation for any emergency, organizations should follow the principals of emergency preparedness. These principles include:

- A pre-tested Plan of Action that is developed in advance of the emergency event.
- Defined roles and responsibilities for key organizations and individuals who will be involved in the emergency response.
- Routine communication among key organizations and individuals established as part of the planning process.
- Identification of resources, including financial.
- Dissemination of educational materials to all first responders.

As with any preparation for an emergency, all organizations should plan for the pandemic flu. To assist state, provincial and local governments in the planning process, the CDC has developed a checklist which can be found at <http://www.pandemicflu.gov/plan/statelocalchecklist.html>. A planning checklist was also released for use by medical, dental, podiatric and chiropractic offices, ambulatory surgery centers, hemodialysis centers and outpatient clinics, which can be found at <http://www.pandemicflu.gov/plan/medical.html>. Also, the IAFF has developed a checklist specific to the fire service that is based on NFPA 1500 *Standard on Fire Department Occupational Safety and Health Program*; NFPA 1581 *Standard on Fire Department Infection Control Program*; and NFPA 1600 *Standard on Disaster / Emergency Management and Business Continuity Programs* which can be found at [/PDF/IAFF Influenza Pandemic Checklist.pdf](#).

In addition to simulation exercises, computer models can be used to assist in estimating the impact of a pandemic flu. To this end, the CDC has developed FluAid, software to assist state, provincial and local planners: <http://www.cdc.gov/flu/tools/fluaid/index.htm>.

The World Health Organization also has developed a pandemic influenza draft protocol for rapid response and containment and can be found for review and download at: <http://www.who.int/csr/disease/swineflu/en/index.htm>.

The U.S. Department of Health and Human Services (HHS) issued a report in 2007 that outlines how U.S. federal funding is being used to help achieve HHS's five primary objectives;

- Monitoring disease spread to support rapid response.
- Developing vaccines and vaccine production capacity.
- Stockpiling antivirals and other countermeasures.
- Coordinating federal, state and local preparation.
- Enhancing outreach and communications planning.

This report can be found at <http://www.pandemicflu.gov/plan/pdf/panflu20060313.pdf>. Updates of the federal plan can be found at <http://www.hhs.gov/pandemicflu/plan/>.

The CDC is currently developing *Interim Guidance for Emergency Medical Services (EMS) Systems and 9-1-1 Public Safety Answering Points (PSAPs) for Management of Patients with Confirmed or Suspected Swine Influenza A (H1N1) Virus Infection* in response to the current swine flu outbreak. When completed, the document can be found at the following link: [http://www.cdc.gov/swineflu/guidance\\_ems.htm](http://www.cdc.gov/swineflu/guidance_ems.htm).

# How can I protect myself?

## Overall Care during a Pandemic Alert

The best protection against the global swine influenza A (H1N1) virus outbreak is strict adherence to infection control procedures. Follow universal precautions and the latest updates issued by the CDC, PHAC and WHO.

Additionally, fire departments should have an Infection Control program that meets the minimum requirements of NFPA 1581 (chapters 5 and 6), *Standard on Fire Department Infection Control Program* (<http://www.nfpa.org>).

In response to the intensifying outbreak, the World Health Organization raised the worldwide **pandemic alert level to Phase 5**. The Phase 5 alert is characterized by confirmed person-to-person spread of a new influenza virus able to cause “community-level outbreaks.” The increase in the pandemic alert phase indicates that the likelihood of a pandemic is imminent. The best preparation is to be aware of the guidelines for handling highly contagious respiratory infectious agents. Following are the guidelines adopted in part from documents developed by the IAFF from both Smallpox and SARS preparation and experience.

## Respirators

Only use a P-100 disposable respirator as a **minimum** respiratory protection or a respirator with a higher level of respiratory protection, including a full or half facepiece air purifying respirator (APR) or powered air purifying respirator (PAPR) with a HEPA filter/canister .

When properly fitted, maintained and used, a P-100 respirator (or an APR or PAPR with a HEPA filter) provides protection from inhalation of infectious airborne droplets. The P-100 respirator provides the highest levels of aerosol protection as compared to respirators rated only for particulate (aerosol) protection. However, there are NO safe exposure levels (i.e. the amount you can inhale without adverse health effects) for biological aerosols. Respirators can reduce inhalation exposures but cannot eliminate the risk of contracting infection or developing illness or disease. Additionally, the type of respirator facepiece and filter class required varies depending upon one's activities and risk of exposure. For public and hospital use, many have suggested that N-95 respirators. The IAFF does not believe that this type of respirator will afford fire fighter and emergency medical personnel proper protection. Accordingly, the IAFF recommends that emergency responders use, at a minimum, a P-100 respirator.

The IAFF's P-100 filter efficiency recommendation is consistent with NIOSH recommendations for emergency response to biological agent incidents: <http://www.cdc.gov/niosh/docs/2009-132/>. Additionally the IAFF's recommendation is consistent with federal OSHA regulations that state “where workers are exposed to a hazard that would require the use of a respirator with HEPA filtration, the appropriate class of respirator under the 42 CFR Part 84 certification is the Type 100 (N-100, R-100, or P-100).” The IAFF recommendation is also consistent with the specifications contained in the World Health Organization's *Hospital Infection Control Guidance for SARS* (<http://www.who.int/csr/sars/infectioncontrol/en>).

Additionally, disposable respirators must have seal enhancing elastomeric components (e.g. rubber or plastic respirator to face seals) and must be equipped with two or more adjustable suspension straps. The IAFF believes, and research has demonstrated, that without these components it is difficult, if not impossible, to obtain and maintain a seal in the workplace.

All disposable respirators, as well as APRs and PAPRs, must also be certified by the National Institute for Occupational Safety and Health (NIOSH). NIOSH-approved disposable respirators are marked with the manufacturer's name, the part number (P/N), the level of protection provided by the filter (e.g., P-100), and “NIOSH.” This information is printed on the facepiece, exhalation valve cover, or head straps. If a NIOSH marking is not on the respirator, it is not certified by NIOSH and should not be used.

An P-100 respirator is one of nine types of disposable particulate respirators. Particulate respirators are also known as “air-purifying respirators” because they protect by filtering particles out of the air as you breathe. These respirators protect *only* against particles—not gases or vapors. Since airborne biological agents such as bacteria or viruses are particles, they can be filtered by particulate respirators.

Respirators that filter out at least 95% of airborne particles during “worse case” testing using a “most-penetrating” sized particle are given a “95” rating. Those that filter out at least 99% receive a “99” rating. And those that filter at least 99.97% (essentially 100%) receive a “100” rating.

Respirators in this family are rated as N, R, or P for protection against oils. This rating is important because some industrial oils can degrade the filter performance so it does not filter properly.\* Respirators are rated “N,” if they are *not* resistant to oil, “R” if somewhat *resistant* to oil, and “P” if strongly resistant (*oil proof*) or **if conditions unknown**. The IAFF bases its recommendation for “P” rated disposable due to the fact that emergency response is usually to “unknown condition” environments. Currently there are no NIOSH approved R-99, P-99 or R-100 disposable particulate respirators.

Since respirator classes are designated for use in certain environments with the P-100 being the most universal, NIOSH has designated only the P-100 respirator with magenta color coding and markings.

A list of manufacturers/suppliers and model numbers of P-100 disposable respirators is maintained by NIOSH at [http://www.cdc.gov/niosh/npptl/topics/respirators/disp\\_part/p100list1.html](http://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/p100list1.html).

The effectiveness of any respirator is highly dependent on having respirators that are well-fitted to fire fighters' faces. Respirators that leak may offer essentially no respiratory protection. All respirator use must be administered as part of a comprehensive Respiratory Protection Program (RPP), according to the Occupational Safety and Health Administration (OSHA). The RPP contains provisions for training respirator users, selecting and maintaining respirator equipment, conducting fit-checks and conducting fit tests. For additional information, see the Respiratory Protection Standard (29CFR 1910.134), under the Laws and Regulations link at <http://www.osha.gov>.

A respirator is not a guarantee of protection against any disease. However, if a high-filtration respirator is worn with eye protection and medical gloves by a trained individual, a high degree of protection should be conferred.



**P-100 Respirator**

In the event that an influenza pandemic occurs, the availability of disposable respirators may be severely strained and demand may far exceed current manufacturer production capability. The U.S. Department of Health and Human Services (DHHS) has charged the Institute of Medicine (IOM) of the **National Academies** (which provides science-based advice on matters of biomedical science, medicine, and health) with making recommendations on the development of reusable respirators for use during an Influenza pandemic in healthcare settings and for the general public. The IAFF has participated in this process to ensure protection is not compromised and will continue to push for the highest level of protection for first responders. Fire and EMS departments must assess their supply of disposable respirators and determine whether there is a need to stockpile adequate supply before the demand becomes overwhelming for the current production system. For more information on the IOM project, click on the link below <http://www.iom.edu/CMS/3740/32033/34200.aspx>.

## Hand Care

Remember, one of the easiest ways to transmit a viral infection from one person to another is through a handshake, which transfers virus from the hand of one person who may have rubbed his nose to another person's hand. The second individual then touches his/her nose, eyes, or mouth and later develops an infection. In situations where the patient has a high fever and any respiratory signs, take the following precautions:

- Don disposable medical gloves, certified to NFPA 1999, *Standard on Protective Clothing for Emergency Medical Operations*, prior to making any patient contact.
- Station wear should be washed at the station, not at home.
- Use of such disposable gloves should be considered for any direct contact with body fluids of an infected patient. However, these gloves are not intended to replace proper hand hygiene. Immediately after activities involving contact with body fluids, gloves should be removed and discarded and hands should be cleaned. Gloves must never be washed or reused.
- The use of gloves does not eliminate the need for hand hygiene. Likewise, the use of hand hygiene does not eliminate the need for gloves. Gloves reduce hand contamination by 70 percent to 80 percent, prevent cross-contamination and protect both patients and health care personnel from infection. Antiseptic handrubs should be used before and after each patient, just as gloves should be changed before and after each new patient. When soap and water become available, thoroughly wash hands. Avoid touching hands to face until such a thorough washing of hands takes place.
- Wash with soap and warm water. Wash for 15 to 20 seconds.
- When using an alcohol-based handrub, apply the product to the palm of one hand and rub your hands together, covering all surfaces of your hands and fingers, until your hands are dry. Note the volume needed to reduce the number of bacteria on hands varies by product.
- Personnel should avoid wearing artificial nails and should keep natural nails less than one quarter of an inch long, particularly if they come in contact with patients at high risk of acquiring infections.

## Eye Care

In situations where the patient has a high fever or any respiratory illness symptoms, take the following precautions:

- Don protective eyewear, certified to NFPA 1999, *Standard on Protective Clothing for Emergency Medical Operations*, in situations where bodily fluids may be splashed. Splash-protective eyewear must be worn within 6 feet of the patient. Corrective eyeglasses alone are not appropriate protection.
- Do not rub eyes before or after using eyewear or after handling patients or equipment.

## Patient Care

In situations where the patient has a high fever or any respiratory illness symptoms, take the following precautions:

- Apply a disposable surgical mask (or disposable respirator without an exhalation valve if surgical mask is not available) to all persons suspected of having an infection (except for those receiving oxygen therapy through a facemask).
- Each patient with suspected infection should be advised to cover his or her mouth and nose with a facial tissue when coughing or sneezing. If possible, a patient should wear a surgical mask during close contact with uninfected persons to prevent spread of infectious droplets. When an infected patient is unable to wear a surgical mask, household members should wear surgical masks when in close contact with the patient.
- When a patient requires rescue breathing, use a bag-valve-mask -- NEVER use direct mouth-to-mouth or mouth-to-mask resuscitation.

## **Patient Transport**

- When transporting persons suspected of having a highly contagious respiratory infection, do not allow air to recirculate within the vehicle, especially do not use the recirculation (Maximum Level) control on the vehicle's heating/air conditioning system. When possible, open windows/vents for improved ventilation.
- Respirators may not be removed to eat or drink while in the transport vehicle. Personal activities that require removal of respirators should not be performed in the patient-care cabin.
- The patient may wear a paper surgical mask to reduce droplet production, if one can be tolerated.
- Oxygen delivery with simple and non-rebreather facemasks may be used for patient oxygen support during transport.
- A full facepiece APR or PAPR with a HEPA filter or a P-100 respirator with goggles (or face-shields) must be worn for all patient care within 6 feet of the patient. Corrective eyeglasses alone are not appropriate protection.
- Patient care personnel should not wear leather or other non-medical gloves while transporting patients.
- Eating, drinking, application of cosmetics and handling of contact lenses should not be done in the immediate patient care area.
- Handling or storage of medication or clinical specimens should not be done in areas where food or beverages are stored or prepared.

## **Decontaminating equipment**

- Dispose of disposable respirator, respirator filters, gloves and other disposable equipment/supplies used at the scene as bio-hazardous waste.
- Non-disposable respirators shall be cleaned and disinfected in accordance with manufacture's recommendation.
- For decontamination of non-disposable equipment, follow manufacturer and departmental standard operating procedures.
- If the turnout gear is visibly contaminated by bodily fluid, it should be placed in a biohazard bag at the scene and washed following prescribed laundry procedures. Chlorinated beach shall not be used with any fire fighter protective clothing.
- Vehicles used to transport persons suspected of having H1N1 (swine flu) should be cleaned with a disinfectant cleanser by staff wearing protective equipment, using a disinfectant cleanser.

## **Contacts of suspected flu patients**

- When possible, in advance of a patient evaluation, healthcare providers should be informed that the individual is a close contact of a pandemic flu patient. Patients presenting to health care facilities who require assessment for pandemic flu should be diverted to a room designated for respiratory isolation.
- Sharing of eating utensils, towels, and bedding between pandemic flu patients and others should be avoided, although these items can be used by others after routine cleaning (e.g., washing with soap and hot water). Environmental surfaces soiled by body fluids should be cleaned with a household disinfectant according to manufacturer's instructions; gloves should be worn during this activity.

- Household members or other close contacts of pandemic flu patients who develop fever or respiratory symptoms should seek healthcare evaluation.
- At this time, in the absence of fever or respiratory symptoms, household members or other close contacts of pandemic flu patients need not limit their activities outside the home. Within an affected household, facial tissues and other waste from pandemic flu patients may be discarded as normal household waste.

## What travel precautions are being taken?

### CDC, WHO or PHAC Health Alerts

The CDC and PHAC may provide travel restriction to countries with cases of pandemic flu. Since pandemic flu situations can change at any moment, check the CDC alert site at <http://www.cdc.gov/travel/diseases.htm>, the WHO International Travel and Health alerts at [http://www.who.int/ith/updates/2009\\_04\\_28/en/index.html](http://www.who.int/ith/updates/2009_04_28/en/index.html) or the PHAC alert site at [http://www.phac-aspc.gc.ca/tmp-pmv/2006/h5n1060112\\_e.html](http://www.phac-aspc.gc.ca/tmp-pmv/2006/h5n1060112_e.html) prior to any travel.

### Quarantine

Pandemic flu can be quarantinable communicable diseases under the U.S. Public Health Service Act. As the risk for pandemic flu rises, the list will likely be updated. The most recent U.S. Executive Order on quarantinable diseases can be found at: <http://www.cdc.gov/ncidod/sars/executiveorder040403.htm>. PHAC, under its Quarantine and Migration Health Program (QMHP), is responsible for implementing the [Canadian Quarantine Act and Regulations](#). Additional information on the QMHP can be found at: [http://www.phac-aspc.gc.ca/cepr-cmiu/ophs-bssp/quar\\_e.html](http://www.phac-aspc.gc.ca/cepr-cmiu/ophs-bssp/quar_e.html).

Many levels of government (federal, provincial, state and local) have basic authority to compel isolation of sick persons to protect the public. In the event that it is necessary to compel isolation of a sick passenger, CDC and PHAC will work with appropriate state, provincial and local officials to ensure that the passenger does not infect others.

### Outlook on Pandemic Influenza

Health authorities around the world are watching closely so that they may respond promptly in the identification and reporting of suspect cases. The World Health Organization will issue a Global Alert should the need arise.

### Where can I learn more?

Updated information on pandemic flu is available on the following web sites:

#### International

- World Health Organization (WHO) - [http://www.who.int/csr/disease/avian\\_influenza/updates/en/index.html](http://www.who.int/csr/disease/avian_influenza/updates/en/index.html).
- WHO Pandemic Preparedness - <http://www.who.int/csr/disease/influenza/pandemic/en/index.html>
- European Influenza Surveillance Scheme - <http://www.eiss.org/index.cgi>

#### Canada

- Canada - [http://www.phac-aspc.gc.ca/influenza/pandemic\\_e.html](http://www.phac-aspc.gc.ca/influenza/pandemic_e.html)

#### United States

- Official U.S. government website on Pandemic and Avian Influenzas - <http://www.pandemicflu.gov/>
- Centers for Disease Control (CDC) - <http://www.cdc.gov/flu/weekly/fluactivity.htm>

## Preparation Checklist

- <http://www.nfpa.org/>
  - NFPA 1600 – *Standard on Disaster/Emergency Management and Business Continuity Programs*
  - NFPA 1500 – *Standard on FD Occupational Safety and Health Program*
  - NFPA 1561 – *Standard on Emergency Services Incident Management System*
  - NFPA 1999 – *Standard on Protective Clothing for Emergency Medical Operations*
- <http://www.pandemicflu.gov/plan/statelocalchecklist.html>
- <http://www.pandemicflu.gov/plan/businesschecklist.html>
- <http://www2.cdc.gov/od/fluaid/default.htm#Sectiona>

## Glossary

### A

acute: Sudden onset, short course. May also refer to intensity or severity.

aerosolized respiratory secretions: Liquid droplets, suspended in air that arise from coughing or sneezing. Aerosolized respiratory secretions are responsible for the transmission of tuberculosis, and are one of the major modes of influenza transmission.

Amantadine (Symmetrel): Antiviral medication for treatment and prophylaxis of adults and children >1 year old with influenza type A virus exposure. It is not effective against influenza type B.

antibodies: Proteins produced by the immune system secreted into the blood or lymph system in response to an antigenic stimulus, e.g. bacterium, virus, parasite, and neutralizes the antigen by binding to it.

antigen: Any substance that elicits an response from the body's immune system to produce antibodies against it. An antigen may be a foreign substance, e.g. chemicals, bacteria, viruses or pollen.

Antigenic drift: Gradual minor change (mutation) in the genetic makeup of influenza A and B strains that result in changes in the hemagglutinin (H) or neuraminidase (N) proteins found on the viral surface. The ongoing changes of H and N are the causes of annual epidemics and need for new influenza vaccine each year.

Antigenic shift: A reassortment of influenza A genes resulting in a major change in the H and N proteins. Because very few people are immunized against such a novel strain of virus, antigenic shift may be associated with a pandemic.

Avian Flu: A group of influenza viruses that primarily infect birds, but on rare occasion may infect other animals such as pigs or humans.

### C

CDC (Centers for Disease Control and Prevention): A United States government agency that seeks to promote health and quality of life by preventing and controlling disease, injury, and disability.

### E

epidemic: The onset of a disease that occurs in an unusually high number of individuals in a community at the same time and is clearly in excess of normal expectancy in a defined community, geographical area or season.

F

flu: Infection and illness due to influenza virus. It is often erroneously used to refer to common colds or even gastrointestinal illnesses.

H

Hemagglutinin (H): An agglutinating protein (antigen) on the surface of influenza virus. Differences in the amino acid sequences give rise to the different subtypes of influenza type A viruses.

hypoxia: A deficiency of oxygen reaching the tissues of the body.

I

incubation period: The period of time between the infection of an individual by a disease-causing agent and the manifestation of the disease it causes.

infectious: Capable of transmitting an infectious agent from one person to another

influenza: A highly contagious seasonal respiratory illness caused by the influenza virus. It is characterized by fever, chills, sore throat, nasal congestion, cough, exhaustion, and severe muscle aches.

intubation: The introduction of a tube into the trachea to mechanically maintain oxygen flow to the lungs.

M

morbidity: Departure from a state of well-being (physiologically or psychologically).

mortality: Death

mutation: A relatively permanent change in the genetic material

N

Neuraminidase (N): A hydrolytic enzyme (antigen) on the surface of influenza virus. It dissolves the protective viscosity of cellular mucous lining, allowing release of new viruses into the respiratory tract.

NFPA (National Fire Protection Association): An international nonprofit organization that seeks to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating scientifically-based consensus codes and standards, research, training, and education.

P

pandemic: A widespread, usually global spread of a disease, which the human population has no immunity.

prevention: Taking measures for anticipation, prevention, detection, and early treatment of disease

Preventive Medicine: A branch of medical science dealing with methods of preventing the occurrence of disease or illness

Public Health: The art and science of protecting and improving community health by means of prevention, education, disease control, and sanitation.

PHAC (Public Health Agency of Canada): A Canadian government agency that seeks to promote and protect the health of Canadians through leadership, partnership, innovation and action in public health.

## Q

quarantine: A restraint on the activities of persons or the transport of goods that is designed to prevent the spread of disease.

## R

resistance: The ability of microbial strains or pathogens to withstand effects of antimicrobial agents

rimantadine (Flumadine): Antiviral medication for treatment and prophylaxis of adults with influenza type A virus exposure. It is not effective against influenza type B.

## S

subtype: A sub-classification of influenza type A viruses based on the surface proteins – hemagglutinin (H) and neuraminidase (N)

swine influenza A (H1N1): A respiratory disease of pigs caused by type A influenza viruses that causes regular outbreaks in pigs. Until recently the swine influenza A (H1N1) virus has not normally infected humans, but the latest form has and can be spread from person-to-person. The latest H1N1 contains genetic material typically found in strains of the virus that affect humans, birds and swine.

## V

vaccination: The administration of vaccine in order to induce an immune response for future protection against the infectious agent of interest

vaccine: A substance that can stimulate the immune system to protect against an infectious organism of interest at a future point in time.

virus: A group of infectious parasites that are typically much smaller than bacteria and characterized by their inability to reproduce outside of a living host cell.

## W

WHO (World Health Organization): Specialized health agency of the United Nations that seeks the attainment by all peoples of the highest possible level of health. WHO is governed by 192 Member States through the World Health Assembly.