



Pandemic Plan for the Church

Ministering to the Community in a Time of Crisis

Infection Control

This plan was written with one objective: that if an influenza pandemic similar to the one of 1918 were to occur, that Christians would not fall victim but be prepared, enabling them to bring the gospel of Jesus Christ into the situation. If a pandemic of this epic proportion were to occur, the virus would be highly lethal. Encouraging Christians to visit the sick without knowledge and training on proper precautions would be foolhardy knowing the dangers of such a deadly pathogen. Even taking the proper precautions to prevent getting the disease, there is still no guarantee that you too will not become ill. This section presents information on infection control and personal protection to help protect against acquiring the disease while caring for the sick. Again, there is no assurance that you will not acquire the virus; however, this section will equip you for the battle.

Infection control is the discipline concerned with preventing the spread of infection. It is essential to practice this discipline without exception. Successful infection control for pandemic influenza uses the same strategies as for any infectious agent. Practicing infection control will help minimize the spread of infection and help protect both those delivering and receiving care. The discipline of infection control should be considered standard operating procedures and should never be compromised.

Disease is spread by the transmission of pathogens. A pathogen is a virus, bacteria or any other microorganism that has the ability to cause illness. Pathogens spread differently depending on their method transmission from person-to-person. Methods of transmission are contact, airborne, or droplet transmission. Regardless of the method of transmission, standard precautions are the basic, minimum precautions to take for all patient contact.

Lessons Learned from SARS, MERS, and Ebola

Many lessons can be learned from the 2003 outbreak of SARS. Observations of healthcare workers caring for SARS patients during this epidemic displayed numerous violations in infection control, especially in the use of personal protective equipment (PPE). This led to the lack of containment and the spread of SARS across continents. The spread of MERS in Saudi Arabia and South Korea has occurred mostly in the hospital settings. It is believed the source of this is the healthcare workers are non-compliant in regard to practicing strict infection control.

In addition to healthcare workers not donning their PPE properly, employers bear responsibility as well. It was a healthcare worker in China who tweeted out in fear that people were dying, and no one was telling what workers what was happening. Another lesson learned is that of the Intensive Care Unit nurse, Nina Pham, in Texas who cared for the first patient to present with Ebola in the United States. She was not given proper instructions or PPE to care appropriately protect herself while caring for the patient. Fortunately, although she acquired the disease, she recovered.

Both healthcare employers and workers must be compliant in PPE. The employer must be informed of the current PPE that meets the requirements necessary to protect the caregivers; and the workers must be compliant and practice strict discipline in donning PPE.

The use of the PPE required for Ebola requires training to ensure the caregiver does not acquire the disease during the process of donning and doffing.

Standard Precautions

Standard precautions are the basic, minimum precautions to take to reduce the risk of spread of a disease. This basic level of infection control should be practiced in the care of ALL patients. Transmission-based precautions should be used when standard precautions alone do not fully protect the caregiver from the particular disease to which they are exposed. Standard precautions reduce the risk of the spread of pathogens from exposure to blood and other body fluids or secretions. Again, these precautions are to be used regardless of the diagnosed pathogen.

Proper Hand Hygiene

Viruses can be spread by touching a contaminated surface then touching mucous membranes of the eyes, nose, and mouth. Influenza A and B viruses can persist on both porous and nonporous surfaces for hours and even days depending on a variety of factors. Influenza viruses can live on hands for up to five minutes. Proper hand hygiene is the best defense in controlling infection during an influenza pandemic.

Proper hand hygiene requires good hand washing, below are tips to practice good hand hygiene:

- The total amount of time should take about 40-60 seconds. Some even suggest to wash for the duration of singing the tune “Happy Birthday”.
- Remove hand and arm jewelry. Jewelry is very hard to clean, and bacteria and viruses can hide beneath and in the crevices of rings and bracelets, even with good hand washing.
- Wet hands with warm water.
- Apply liquid or foam soap. Do not use a bar of soap because it may hold bacteria that can then be spread to other users.
- Vigorously lather all surfaces of hands for a minimum of 15 – 30 seconds rubbing to remove dirt and bacteria.
- Pay particular attention to finger tips, between fingers, backs of hands and base of the thumbs. These are the most commonly missed areas.
- Using a rubbing motion, thoroughly rinse soap from hands.
- Dry hands by blotting hands gently with a paper towel.

- Turn off taps with a paper towel, to avoid recontamination of your hands.
- If you use a hand dryer, do not use your clean hands to press the buttons to turn it on.

Hand hygiene should be performed before and after patient contact, and after removing gloves or other personal protective equipment (PPE). In addition to the care giver using standard precautions, all those having contact with the patient should also exercise the same practices, including the patient.

Alcohol-Based Hand Rub

Good hand hygiene should also include the use of an alcohol-based hand rub. Alcohol sanitizer is the preferred method for decontaminating hands. Health officials state that using an alcohol-based hand rub is better than washing hands (even with an antibacterial soap) when hands are not visibly soiled. However, hand washing with soap and running water should be performed when hands are visibly soiled. If running water is not available, use moistened towelettes to remove the visible soil, followed by an alcohol-based hand rub.

Indications for Hand Hygiene

Below is a list of recommendations when to practice hand hygiene:

- Before and after any direct patient contact and between patients, whether or not gloves are worn.
- Immediately after gloves are removed.
- After touching blood, body fluids, secretions, excretions, non-intact skin, and contaminated items, even if gloves are worn.
- During patient care, when moving from a contaminated to a clean body site of the patient.
- After handling any objects in the immediate vicinity of the patient.
- After personal bodily functions, such as using the toilet or blowing one's nose.
- Before preparing, handling, serving or eating food.

Hand Hygiene and Personal Protective Equipment

In addition to good hand hygiene, dependent on the risk of exposure to bodily fluids, protective equipment such as non-sterile gloves should be worn when coming into direct contact with a patient. Standard precautions should also be practiced when handling soiled clothes, linens, or any equipment used in caring for the patient such as a thermometer.

Respiratory Hygiene and Cough Etiquette

Instruct people with respiratory symptoms to cover their coughs and sneezes by doing so into the bend of their elbow, not into their bare hands. Even better, they should cover their

coughs and sneezes with a tissue or a mask. Then these should be properly disposed. Hand hygiene after contact with respiratory secretions should be performed.

Respiratory etiquette should be practiced by all people, not just the patient. Masks and tissues should be in abundant supply when caring for a sick person. Provide ample space between individuals, especially anyone with these symptoms accompanied by a fever should be separated from others.

Personal Protective Equipment (PPE)

If attending to a person exhibiting respiratory symptoms such as a cough or sneeze, standard precautions should include appropriate facial, eyes, nose, and mouth protection.

Respiratory PPE includes:

- Clean, non-sterile gloves
- Clean, non-sterile fluid resistant gown (disposable is recommended since viruses can live on fabric for long periods of time)
- If wearing a washable gown, please see the section on “Laundry” in the chapter titled “Disinfecting Surfaces”.
- Face mask
- Eye protection (goggles or a faced shield)

In addition, it has been determined that necessary PPE is to be worn to minimize exposure to a variety of hazards that include blood, body fluids, excretions, and secretions. **ASSESS THE RISK** of exposure to body substances or contaminated surfaces then take the proper precautions **BEFORE** any patient care takes place. Make this a routine!



Personal Protective Equipment (Gloves, Mask, Gown)

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Who should use Personal Protective Equipment?

- All individuals who provide direct patient care.
- All family members coming into contact with patient.
- All visitors coming into contact with a patient.
- Any one handling linens, utensils, equipment, trash that comes from the patient's area.

Selection of Personal Protection Equipment

Determining the type of PPE to don is based on the type of care that will be provided. This section describes the different pieces of equipment, and when to use them.

Disposable Gloves



Disposable Gloves
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Health officials recommend the use of gloves made of latex, vinyl, nitrile, or other synthetic materials as appropriate, when there is contact with blood and other bodily fluids, secretions, excretions, mucous membranes, including respiratory secretions. Recommendations for the use of disposable gloves are the following:

- Change between tasks and procedures on the same patient after contact with potentially infectious material.
- Remove after use and discard, before touching non-contaminated items and surfaces, and before going to another patient.
- When gloves are torn, cut, or punctured they should be removed and replaced.
- Gloves do not eliminate the need for hand washing. Perform hand hygiene immediately after removal.
- There is no need to double-glove.
- Disposable gloves should not be washed or reused.

Rubber Gloves

If during an influenza pandemic, the supply of gloves becomes limited, it may be necessary to reuse gloves. In addition, when using cleaning supplies, thick, rubber gloves can be used in place of disposable gloves. Rubber gloves must be cleaned properly to ensure sterility:

- Designate a bucket to collect contaminated rubber gloves
- Place bucket in laundry area
- Wear PPE
- Carefully move soiled gloves to a bucket with fresh soapy water
- Gently rub the gloves to remove any visible soil and cover in a 1:100 bleach solution
- Soak gloves overnight
- Rinse the gloves in clean water.
- Check for holes:
 - Fill each glove with rinse water. If any water squirts out, there is a hole in the glove
 - Discard any gloves with holes
- Air-dry the remaining gloves
- If available, put talcum powder or corn starch in dry gloves
- Return clean gloves to the treatment area

If glove supplies are reduced, other barriers such as disposable paper towels should be used when there is limited contact with respiratory secretions, such as handling used facial tissues. Hand hygiene should be practiced consistently in this situation.

Goggles and Facial Protection (eyes, nose, and mouth)



Goggles
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If a pandemic influenza patient is coughing, any caregiver within three feet of the infected patient is likely to encounter sprays of infectious material. Eye and face protection should be used in this situation.

- Wear a surgical or procedure mask and eye protection (face shield, goggles) to protect mucous membranes of the eyes, nose, and mouth during activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions. Eyeglasses worn daily are not as effective as goggles; goggles protect eyes from the front and the sides.
- If sprays or splatters of infectious material are likely, goggles or a face shield should be worn.
- Place a face mask on the patient as well.
- For additional information about eye protection for infection control, visit the National Institute for Occupational Safety and Health's website at <http://www.cdc.gov/niosh/topics/eye/eyeinfectious.html>.

Gowns

Caregivers should wear an isolation gown when it is anticipated that soiling of clothes with blood or other bodily fluids, including respiratory secretions, may occur. At the time of this writing, according to CDC, most routine pandemic influenza patient encounters do not necessitate the use of gowns. Examples of when a gown may be needed are if you expect to be exposed to copious amounts of secretions or holding a patient closely. Recommendations for the use of gowns are as follows:

- Isolation gowns can be disposable and made of synthetic material or reusable and made of washable cloth.
- Gowns should be the appropriate size to fully cover the areas requiring protection.
- Any situation that requires a gown would also require gloves, a mask and goggles.
- Remove soiled gown as soon as possible, and place in a laundry receptacle or waste container, designated for soiled gowns and mixed with other laundry.
- When removing a gown, do so using extreme care so not to shake, rub, or splash and bodily fluids onto yourself.
- Hand hygiene should follow.

Ways Infection Can Spread and Proper Protection

The personal protective equipment (PPE) used depends on the mode of transmission of a specific disease. There are three types of transmission-based precautions: *contact*, *droplet*, and *airborne*. Some diseases require more than one type of transmission-based precaution (e.g. SARS, which requires airborne and contact precautions as well as eye protection with all patient contact). Let it also be noted that in autopsies performed on victims of the H5N1, the virus was not only found in the lungs, but also cerebrospinal fluid and feces. These findings should reinforce the need to use the proper PPE when handling patients, any body fluids, and laundry.

Contact Transmission

Having direct contact with an ill person can facilitate contact transmission. This can occur by skin-to-skin contact. Indirect contact transmission is also possible by touching a contaminated surface or object. Contaminated surfaces can include tops of furniture, kitchen, and bathroom counter tops, thermometers, bed, linens, etc.... MRSA, scabies, herpes virus, and norovirus, are examples of infections that can be transmitted by contact.

Pathogens may be carried in:

- Draining wounds
- Secretions
- Pressure ulcers
- Tubes such as ostomy or feeding tubes
- Bags draining body fluids including Foley bags
- Feces
- Generalized rash /skin lesions

In addition to standard precautions, contact precautions include:

- Wearing gloves and a gown when in contact with the individual, surfaces, objects within the patient's environment.
- Wearing a gown if substantial contact with the patient or their environment is anticipated.
- Putting on PPE (such as gowns) prior to entry into a patient room and taking off PPE prior to leaving the room.
- Performing hand hygiene after removal of PPE.
- Cleaning and disinfecting the room accordingly.
- Dedicating equipment to the patient, not to be shared with other individuals.
- Discarding disposable items in a waste basket in the room.
- Limiting patient movement.
- Placing the patient in a private room or with others who are also infected with the same disease.

Droplet Transmission

Droplet transmission occurs when pathogens are carried in large droplets within three feet or more of the infected person. This can occur with coughing, sneezing, and talking. Some examples of pathogens that are carried in this fashion are:

- *Bordetella pertussis* (whooping cough)

- Viral infections e.g. influenza virus, rhinovirus
- Neisseria meningitidis (meningitis)
- Mycoplasma pneumonia

Place the patient in a room with a closed door as soon as possible. The patient should wear a face mask and remain separate from others.

In addition to standard precautions, droplet precautions include:

- Wearing a facemask, such as a procedure or surgical mask, for close contact with the patient; the facemask should be donned upon entering the exam room
- Donning gloves, a gown, and goggles (or face shield in place of goggles), if substantial spraying of respiratory fluids is anticipated.
- When leaving the room, the patient should wear a facemask to avoid contact with others, in addition to spreading the pathogen to surrounding surfaces. The patient should practice respiratory etiquette and hand hygiene.
- Perform hand hygiene before and after touching the patient and after contact with respiratory secretions and contaminated objects/materials.
- Clean and disinfect the room accordingly

Airborne Transmission

Airborne transmission occurs when the pathogen is contained in very small, fine particles of evaporated droplets or dusts. Because these particles are smaller and lighter, they can remain in the air for a longer length of time, and can travel along currents farther than droplets.

Examples of pathogens carried in airborne transmission are:

- Tuberculosis
- Measles
- Chickenpox
- SARS/MERS
- H5N1, H7N9 avian influenzas

Airborne precautions are practiced to reduce the risk of airborne transmission of infectious pathogens. In addition to standard precautions, airborne precautions are used for patients known or suspected to have serious illnesses. Current clinical guidelines recommend that airborne precautions be used for such illnesses as H5N1 and H7N9 avian influenzas, SARS, MERS, measles, varicella, and tuberculosis

Airborne precautions include:

- Placing the patient in a negative pressure room (airborne infection isolation room) or area, if available.

- Placing the patient in a single room if a negative pressure room is not available or cannot be created with mechanical manipulation of the air.
- Keeping doors closed to any room or area where patients are resting when not being used for entry or egress.
- If possible, designate bathroom facilities.
- Limiting people entering the isolation room to those necessary for patient care and support.

The department of Health and Human Services and CDC recommend the use of a particulate respirator that is at least as protective as a National Institute for Occupational Safety and Health (NIOSH)- certified N95. Please see the section on “Respiratory Protection for Pandemic Influenza” later in this chapter.



N95 Respirator
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A NIOSH-certified fit-tested N-95 respirator should be donned just before entering into the patient’s room. Remove and discard the respirator just after exiting area. Place the respirator in a plastic zip-lock bag, seal and then discard into the trash. A powered air-purifying respirator (PAPR) may also be used.

If available, portable high efficiency particulate air (HEPA) filtration units may be operated in the area where the infected individual is located to filter out infectious particles. Use of such a unit does NOT eliminate the need to wear respiratory protection.

Consider keeping all the supplies placed strategically outside but close to the entrance of the patient’s room. Purchasing a plastic closet shoe organizer to hang over the outside of the door is a way to store items in a neat way at the point of entrance.

Accidental Contact with Body Fluids

If there is an area on your person that is not protected, an accidental contact can occur. Body secretions, coughs, phlegm, or spray from a sneeze may come in contact with a mucous membrane. Treat any accidental contact immediately in the following way:

- Leave the patient's room and remove any PPE.
- Flush the area in the most appropriate manner with soap and clean water. If a splash occurs in the eye, flush it with clean water.
- If necessary, take a shower
- If working in an alternative care facility, report the exposure to your team supervisor. Complete the necessary forms

Follow Up Care of Accidental Contact

- Monitor the condition of all people providing any assistance in the alternative care facility.
- Obtain a temperature two times per day.
 - If a fever occurs – temperature is 101°F or higher – the worker should not perform patient care activities.
- Treat as a suspected case if the signs and symptoms match those of the virus that is causing the disaster.

Respiratory Protection for Pandemic Influenza

While droplet transmission is likely to be the major route of exposure for pandemic influenza, as is the case with seasonal influenza, it may not be the only route. Given the potential for illness and death associated with pandemic influenza, a preparedness plan should also address airborne transmission as well. If virus particles are carried in the air normal face masks will not be effective against such small particles. Occupational Safety and Health Administration (OSHA) specifies the use of NIOSH 95 Particulate Filtering Respirators. An N95 respirator filters at least 95% of airborne particles.

The effective use of these face masks requires fit testing to ensure a proper fit. Fit testing is usually performed by employers whose employees are at risk for exposure to pathogens or offensive particles. Contact your local health department, occupational medical provider, urgent care, or your local fire department to inquire about fit testing for your church.

There will continue to be uncertainty about the modes of transmission until the actual pandemic influenza strain emerges. It is expected that there will be a worldwide shortage of respirators if and when a pandemic occurs. N95 respirators should be purchased in advance and stockpiled; manufacturers may only supply healthcare facilities that already have a respiratory protection program in place, essential personnel, and not to the general population.

More information on the elements of a comprehensive respiratory protection program and the use of respirators can be found at <http://www.osha.gov/SLTC/respiratoryprotection/index.html>.

For some types of airborne infectious agents (such as SARS), care givers are not only at risk for illness but may become a potential source of infection to patients and others. Selection of appropriate respiratory PPE requires an understanding of the airborne infectious agents and their properties. There are many different types of respiratory PPE available. If you decide to implement a Pandemic Preparedness Plan, contact your local health department for more information.

Transmission of Possible Future Pandemics

The highly pathogenic H5N1 has currently proven to be poor when transmitting from human-to-human. The only human-to-human cases that have been reported involved mothers caring for their sick children, and family members who lived in close quarters.

The H5N1 virus lives in a much warmer environment, in the lower respiratory tracts, and thus is found more readily in the pharyngeal samples and not in the nasal swabs as discussed earlier. This is a good indication that it is not shedding through an infected person's sneezes, and is not readily airborne. However, if it were to mutate to live in a cooler environment and move to the upper respiratory environment, this could change.

The H5N1 virus has been found in the blood, cerebrospinal fluid, and feces of one patient. This raises the concern that it may be transmissible by contact with blood, body fluids and feces in addition to respiratory secretions, but this still remains unknown. Given that the exact transmission pattern or patterns of a pandemic influenza will not be known until after the virus emerges, control strategies may have to be modified to include additional practices.

ⁱ Andrey_Popov, <http://www.shutterstock.com/pic.mhtml?id=125873051>

ⁱⁱ Bestv, <http://www.shutterstock.com/pic-331467296.html>

ⁱⁱⁱ HUAJI, <http://www.shutterstock.com/pic-183417191.html>