

# Preparing for Pandemic Influenza

## Section 1: Introduction

### About This Course

As with any type of emergency, preparation for pandemic influenza is key. Your healthcare organization must have a plan in place to prepare for such an event. This course will address the three stages including preparation, response, and recovery. In this course, you will learn about pandemic influenza, the basic elements of a pandemic influenza plan, and the steps needed to implement this plan when responding to a pandemic.

### Learning Objectives

After taking this course, you should be able to:

- Explain how pandemic influenza occurs.
- Describe three essential elements of a pandemic influenza plan.
- Explain how the elements of a pandemic influenza plan are implemented during the response phase.

## Section 2: Understanding Pandemic Influenza

### What is Pandemic Influenza?

Pandemic influenza is a global outbreak of influenza, or the flu. Unlike the seasonal flu, which occurs every year, the pandemic flu rarely happens. It has only occurred four times since the beginning of the 20<sup>th</sup> century. While pandemic influenza has the ability to cause many deaths, it is not defined by how many deaths it causes. Rather, it is defined by the ability of the virus to rapidly spread throughout the world.

Pandemic influenza occurs when a new influenza virus emerges. This new virus not only has the ability to infect humans, but also remains viable in them and can quickly spread from individual to individual. While flu vaccines can prevent a seasonal influenza infection, there may not be a vaccine for the new strain of influenza virus leaving individuals vulnerable to infection from the virus.

Because individuals do not have immunity to this new influenza virus, the result is high rates of infection and illness. Symptoms are usually moderate to severe, typically requiring some form of medical care, and even healthy individuals are at risk for complications. High rates of infection from exposure to the virus result in a highly contagious illness that can, and does, quickly spread worldwide.

### Viruses that Cause Pandemic Influenza

It is important to note that there are three types of human influenza viruses, types A, B and C. Types A and B can both cause the seasonal flu. Type C only causes mild respiratory illness, not the epidemics seen with type A and B. However, historically, type A has been the only type associated with pandemic influenza.

Type A influenza virus has been further subtyped based upon two proteins that it contains. One protein is hemagglutinin (H) and the other protein is neuraminidase (N). Each of these proteins

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have different subtypes. The hemagglutinin protein has 18 subtypes, and the neuraminidase protein has 11. The name of each influenza A subtype contains the letter for each of these two proteins followed by a number that represents the individual subtype of the protein. According to the CDC (2017c), the H1N1 and H3N2 viruses are the two subtypes of the influenza A virus currently found in humans.

## Changes in the Virus

Type A influenza virus has the capability to constantly evolve making it difficult for the immune system to be prepared for the next outbreak. This is why type A virus continues to thrive and cause illness. The influenza A virus can change in two ways — antigenic drift and antigenic shift. Antigenic drift changes are small genetic changes that are continuously occurring. These small changes are the reason people get the flu more than once.

Antigenic shifts are major changes to the hemagglutinin protein or both the hemagglutinin and neuraminidase proteins. These changes result in a new subtype of the influenza A virus or a virus that has different combination of these proteins that has emerged from an animal population that is different from the same subtype of the virus found in humans (CDC, 2017a). Either way, most people have no immunity against the virus which can potentially result in pandemic influenza.

## Phases of Pandemic Influenza

The World Health Organization (WHO) has defined eight phases of pandemic influenza. These phases describe the pandemic worldwide and are used to determine what actions are necessary to plan, monitor, and reduce the spread of influenza. Knowing which pandemic phase the virus is in will help determine actions taken by governments, healthcare organizations, and individuals. The following are the phases according to the World Health Organization (WHO, 2009).

- **Phase 1:** An influenza virus is spreading among animals but infection among humans has not been reported.
- **Phase 2:** The same influenza virus has now resulted in human infection. It is possible that the virus could become pandemic.
- **Phase 3:** The same influenza virus has caused sporadic cases or small clusters of human infection. The number of cases does not meet the criteria for a community-level outbreak.
- **Phase 4:** The same influenza virus continues to spread and has resulted in a sustained outbreak throughout the community. At this point, there is an increased risk for a pandemic.
- **Phase 5:** The same influenza virus has now spread to two or more countries within a defined WHO region. At this point, the chance of a pandemic is extremely high.
- **Phase 6:** The spread of the same influenza virus has moved into one or more countries outside of the original WHO region from Phase 5. This is often called the pandemic phase.
- **Post-Peak Period:** During this period, the number of cases of influenza begins to decrease from the peak level. However, there may be the potential for a “second wave” of the pandemic. It may even be months before this second wave occurs.
- **Post-Pandemic Period:** The pandemic is over and the number of individuals with influenza closely resembles seasonal influenza numbers.

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Why is it important for you to understand the phases of pandemic influenza? Each phase will signal specific actions that your organization must take. It will be helpful to think of your actions in three stages: preparation, response, and recovery. Going forward in this module, you will learn to plan for pandemic influenza in terms of preparation, response, and recovery.

## Review

You are hosting a meeting with several key management personnel to begin the process of developing a pandemic influenza plan within your organization. You begin by reviewing basic information about pandemic influenza. Which of the following statements indicates that the team has a good understanding of the unique characteristics of the pandemic influenza?

A. Pandemic influenza is defined by how many deaths it causes.

Feedback [While pandemic influenza causes many deaths, it is defined by the ability of the virus to rapidly spread throughout the world.]

**B. Pandemic influenza begins with a new influenza virus.**

Feedback [Because of this, people have little to no immunity to the virus resulting in high infection and illness rates, more severe symptoms, and increased risk for complications even in healthy people.]

C. Pandemic influenza can be effectively prevented with vaccination.

Feedback [While vaccination for influenza is ALWAYS important, there may not be a vaccination available for the strain of the virus causing the outbreak.]

D. Pandemic influenza causes serious complications in older adults.

Feedback [While older adults are always at higher risk for complications related to influenza, pandemic influenza often results in serious complications even in healthy adults because there is little to no immunity to the virus.]

## Summary

Evidence throughout history has shown the deadly consequences of the flu. Pandemic influenza occurs when a new strain of the type A influenza virus emerges. Because there is little to no immunity to the new virus, it can quickly spread from person to person across the globe. As you prepare for pandemic influenza, think about the its phases, as outlined by the WHO. Knowing these phases will help your organizations take effective actions before, during, and after the pandemic.

## Section 3: Preparation

### The Plan

In order for your organization to effectively respond to pandemic influenza, you must be prepared for it. Think of pandemic influenza as you would think of an emergency or disaster. In order to respond to an emergency or disaster, you must have a plan in place. The pandemic influenza plan outlines the actions your organization will take in the event that pandemic influenza strikes your community.

Pandemic influenza can last for months, a year, or even two years. Your plan will help your organization navigate the challenges of the pandemic while also maintaining day-to-day operational and care functions. Remember, your staff and the individuals you care for are counting on you!

If your organization does not have a have current pandemic influenza plan, now is the time to start one! Don't wait for pandemic influenza to strike before developing a plan.

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## Available Resources

Multiple governmental and non-governmental organizations have plans you can use to help guide the development of your organization's influenza plan. The following are several resources you can find by doing an online search.

### WHO

The World Health Organization (WHO) provides global influenza surveillance and resources to governments at the country level. The WHO website contains important information on preparing for and responding to pandemic influenza. One important resource is the *Pandemic Influenza Risk Management: WHO Interim Guidance*.

### CDC

The Centers for Disease Control and Prevention (CDC) collaborates with the WHO on pandemic influenza issues. In the United States, the CDC monitors influenza outbreaks across the country and outlines steps to take when preparing for and responding to pandemic influenza. One important resource by the CDC is the *Updated Preparedness and Response Framework for Influenza Pandemics*.

### OSHA

The Occupational Safety and Health Administration (OSHA) also addresses this topic in relation to healthcare workers and employers. One important resource is the *Pandemic Influenza Preparedness and Response Guidance for Healthcare Workers and Healthcare Employers*.

### State Plans

Another resource for you is your state's pandemic influenza preparedness plan. The federal government requires each state to develop a plan based on CDC and WHO guidelines. Become familiar with the plan in your state. State and local health departments are also available to provide assistance before, during, and after pandemic influenza.

## Pandemic Influenza Committee

The first thing your organization should do when developing a written pandemic influenza plan is to form a committee and identify a committee leader. The pandemic influenza committee will work to establish a pandemic influenza plan that is specific to the operations of your organization.

The team members involved in this committee will vary from organization to organization, but you should ensure that several key team members are involved including the organization's Administrator or Executive Director, Medical Director, Director of Nursing or Clinical Director, Infection Control Coordinator, and Staff Development Coordinator. Each of these committee members can contribute a unique perspective when developing the plan. Additionally, these members will have specific roles when preparing for and responding to a pandemic.

### Administrator

The Administrator or Executive Director will address the communication needs for the organization during a pandemic. They will send out email to staff about updates to policy. They will interface with the public health departments and other healthcare organizations to coordinate pandemic response.

### Medical Director

The Medical Director will help the organization make informed decisions about influenza

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diagnosis, including which lab tests to use, as well as decisions about treatment. They will update healthcare providers about best practices and review professional standards for the treatment of influenza.

## **Infection Control Coordinator**

The Infection Control Coordinator will conduct surveillance and monitoring activities and will implement evidence-based infection control practices during the pandemic. They will review updates from the CDC and public health agencies regarding the current status of pandemic influenza and inform the committee of changes. They will be critical in implementing the preparedness and response plan based on these updates.

## **Director of Nursing**

The Director of Nursing or Clinical Director will help with staffing needs and the monitoring and acquiring of needed supplies. They will help staff implement the pandemic plan and act as resource to staff when complex situations arise. They will coordinate nursing and clinical resources of the organization as a whole.

## **Staff Development Coordinator**

The Staff Development Coordinator will play a key role in educating staff members about the pandemic influenza plan as well as provide any additional training needs staff members may have in regards to infection control and prevention.

Depending on the size of your organization and type of care provided, one person may perform multiple tasks. For example, the Staff Development Coordinator may also be the Infection Control Coordinator. Remember, these roles are key roles that must always be included. Depending on the size of your organization, you may decide to include additional members such as someone to represent environmental and dietary services.

As the committee forms, create a contact sheet for all committee members including mobile phone numbers so that each person can be contacted in case of emergency. Also prepare a list of phone numbers for area hospitals and community emergency services in case you need assistance during a pandemic. Include the contact information for your local and state health departments on the contact sheet. You can coordinate with these departments before, during, and after a pandemic of influenza.

## **Elements of the Plan**

Once you have your committee members identified, you're ready to begin developing the plan. The purpose of the Pandemic Influenza Plan is to organize resources and processes for the effective management of a pandemic influenza outbreak. Basic elements of the preparedness plan include protocols that address:

- Surveillance
- Diagnosis
- Infection control
- Staffing
- Medical surge
- Education

You should recognize that the plan will change based on the needs of your care setting and make adjustments to the plan accordingly.

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The benefit of having a preparedness plan is that it allows your team to quickly communicate and implement action when a pandemic influenza outbreak occurs. The plan will include many types of protocols. Well prepared and written protocols help during pandemics. When prepared in advance, protocols save the time it takes to think through common processes that will be encountered in a given situation.

However, you may not need to reinvent the wheel. Many protocols that you currently have in place may be appropriate for inclusion in the pandemic influenza plan or may only need minor adjustments. For example, your organization will have an infection surveillance policy in place to monitor infection trends within your organization. This same protocol may be sufficient for surveillance activities during pandemic influenza and can be included in the plan without modifications or with very minor modifications.

## Surveillance

The first element in your plan is surveillance. Surveillance is the ongoing collection and analysis of data to identify patterns and trends. Your organization likely has protocols that address surveillance of healthcare-associated infections. These same protocols can be used as part of the surveillance element of your pandemic influenza plan.

During pandemic influenza, systematic and thorough data collection is key to surveillance within your organization. Data should be collected about specific signs and symptoms present, the date that signs and symptoms started, results of any diagnostic testing performed, and the date that signs and symptoms resolve. Information about whether the individual was admitted with signs and symptoms of influenza or if they developed while under the care of your organization should also be included.

One important variable in regards to surveillance is location. Are there specific areas within the community or within a healthcare facility that infection rates are highest? Many healthcare facilities find it helpful to identify patterns and trends using a visual method. To do this, obtain a copy of your facility layout. As suspected or confirmed cases of influenza are identified, use this facility layout to color-code the location of these cases.

Surveillance of employees should also be addressed in this protocol. Your organization should keep track of employees who have provided care to those with suspected or confirmed influenza. Additionally, identify employees who demonstrate signs and symptoms of influenza, the date of onset, results of diagnostic testing, and the date of resolution.

The surveillance protocol should identify who is responsible for collecting and monitoring this data, usually the Infection Control Coordinator, and how often the data is collected and reviewed. At a minimum, surveillance data should be collected on a weekly basis. However, the frequency may need to be increased to daily in some situations.

## Diagnosis

Next develop a protocol for the diagnosis of influenza among staff and individuals the organization provides care to. The Medical Director will play a critical role in the development of this protocol and educating other physicians and healthcare providers about this protocol. During pandemic influenza, the CDC and other government organizations such as local and state public health agencies will provide guidelines on diagnosis. The protocol for diagnosis must incorporate clinical presentation and laboratory testing and the way each will be used for



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diagnosis. The next section on response will discuss diagnosis in more detail.

## Infection Control

The next essential element of the preparedness plan is the infection control protocol. As with surveillance, your organization will already have protocols on infection control practices that likely can be used with minimal modifications in your pandemic influenza plan. All infection control protocols should follow current CDC guidelines. Infection control protocols center around steps your staff can take to prevent transmission of the virus to others. Included in this protocol will be standard precautions, droplet precautions, and respiratory hygiene or cough etiquette. For healthcare facilities, additional considerations must be given to room placement, cohorting, and the restriction of visitors. The next section of this course will discuss implementation of infection control protocols.

## Staffing

Staffing considerations are another important element of your pandemic influenza plan. As staff members of your organization are infected with influenza, staff absences will increase. It is important that your organization have a non-punitive approach to sick leave during the pandemic. When staff come to work sick, they will spread the infection to others worsening the impact on your organization.

The protocol should address what to do if staff become sick at work, when staff can return to work after having influenza, and what to do if staff must stay home with sick family. Your committee will need to consider what to do when a staff member is well enough to work but is symptomatic. For example, during a pandemic where staffing has reached critically low levels, these recovering individuals may be allowed to work as long as they wear a facemask. Allowing this, however, requires careful planning and coordination between the Infection Control Coordinator and Director of Nursing.

What about after the pandemic? Death rates associated with pandemic influenza are often high. Staff must come to terms not only with the death of those to whom they provided care, but also potentially the death of family and friends as a result of the pandemic. Therefore, this element of the plan should identify the mental health effects on healthcare workers. Organizations may choose to offer some form of grief counseling to staff and others to help them process the events of the pandemic.

## Medical Surge

During a pandemic, not only will you need to ensure that your organization is addressing the event itself, but you must also ensure that day-to-day operations and care continue. This element of the pandemic influenza plan should anticipate strains on your organization during a medical surge when it is working at maximum capacity. According to the Department of Health and Human Services (2012), a medical surge is the ability to provide medical care during times when the health care infrastructure is operating at its limits.

During a medical surge, your organization must identify and mobilize resources to meet the care needs of individuals. As you consider how to address medical surge conditions, consider limitations for your organization during normal operation. These weaknesses will likely be exacerbated during a medical surge. For example, if your organization regularly faces staffing challenges, it is likely that during a medical surge your staffing resources will be strained. Consider working with staffing agencies in advance to plan for staffing shortages during a pandemic. You may need to work with community leaders and local healthcare organizations to

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strategize how limitations in healthcare resources will be addressed.

## Education

The final element of the pandemic influenza plan addresses education needs. All staff members of your organization should be educated on your pandemic influenza plans specifically the elements of the plan that pertain to their specific job responsibilities. Some staff members may only need to know about very limited portions of the plan. Others may need to understand the entire plan. The Staff Development Coordinator can help take the lead on identifying what education each job role requires and can help provide that education.

At a minimum, all staff should be educated on:

- What pandemic influenza is
- How the virus spreads
- Steps that can prevent the spread including hand hygiene, applying and removing PPE appropriately, respiratory hygiene, and cough etiquette
- Signs and symptoms of infection and the procedure for reporting these signs and symptoms whether they occur in an employee or an individual cared for by the organization
- Protocol for staying home from work when ill

Education must outline an employee's specific role during a pandemic influenza plan as well as key member of the healthcare team that will drive implementation of the plan.

## Imminent Preparations

Keep in mind that the beginning stages of pandemic influenza may occur overseas or it may begin in the United States. The CDC is continuously monitoring influenza activity within the United States and across the globe in an effort to identify the risk for influenza activity reaching the pandemic level. They have developed a plan for communicating the risk for pandemic influenza.

One method of communication is through a website run by the Department of Health and Human Services called [flu.gov](http://flu.gov). You can do a quick online search to find this website. It will provide communication about the current situation of pandemic influenza including steps the federal government is taking to address the problem. Your pandemic influenza committee can use this information to determine at what point you need to begin making imminent preparations, which involves ensuring that your organization is ready to implement all elements of your pandemic influenza plan.

## Supplies

One final task that your organization must complete to ensure it is prepared to respond to pandemic influenza is confirming the availability of needed supplies. During your imminent preparations, the Director of Nursing or other designated pandemic influenza committee member will need to inventory supplies on hand to determine if the supplies needed to respond to pandemic influenza are available in sufficient quantity.

This includes everything from basic supplies such as facial tissue, alcohol-based hand rubs, soap for hand washing, paper towels, and PPE (especially facemasks) to medical supplies needed when caring for a high number of people with influenza such as over-the-counter



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medication for fever, IV fluids and other supplies, thermometer probe covers, and oxygen.

While you will need to ensure supplies are available, there is a financial impact to the organization. Therefore, the decision to order extra supplies must be carefully considered by the management team and pandemic influenza committee. Some supplies like facial tissues and soap are low cost so stocking up on these items may not present a high financial burden for the organization. Additionally, your organization will likely use most of these items regardless of whether pandemic influenza occurs.

## Review

As a member of the pandemic influenza planning committee, you are tasked with surveillance during pandemic influenza. What action BEST fulfills your duty to monitor the pandemic within your organization?

A. Call a meeting with staff members to discuss individuals with influenza symptoms.

Feedback [This action is not systematic and thus does not provide thorough surveillance of the pandemic.]

**B. Collect data about influenza related information in the medical record.**

Feedback [Data collection during the pandemic provides objective information that tracks the spread of the infection within your organization.]

C. Perform daily walk-throughs of each area within your organization.

Feedback [A daily walk-through does not capture thorough information about the infection.]

D. Check the CDC's website for regular updates about the pandemic.

Feedback [The CDC's website is critical to monitor the spread of the pandemic outside of your organization. Unfortunately, the CDC does not monitor the pandemic within your organization.]

## Summary

Preparation for pandemic influenza is critical to all healthcare organizations. This begins with the pandemic influenza plan. You should spend time to form a committee, create a plan, and track supplies in order to effectively handle a pandemic when it occurs. You will tailor the plan based on the specific needs and scope of practice of those in your healthcare organization. Your pandemic plan will include multiple protocols that direct staff on how to implement activities such as those related to infection control, surveillance, and medical surge. When your organization uses an organized plan with detailed protocols, it can implement pandemic care that works efficiently and cohesively.

## Section 4: Response and Recovery

### Activating Your Plan

Once the CDC has identified that pandemic influenza is present in the United States, your organization will need to activate its pandemic influenza plan. Communication is critical at this point. Staff members need to be aware that the pandemic influenza plan has been activated and reminded that any employee exhibiting signs or symptoms of influenza must report these symptoms immediately according to the method identified in the plan.

Because the presence of pandemic influenza in the United States will likely be the frequent topic of media outlets, your organization should also consider communicating with the individuals under its care and other interested parties such as family members and visitors to ensure they

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understand the plan your organization has in place in response to pandemic influenza. This communication can occur in a variety of ways such as by phone, letter, or even a scheduled meeting.

It is important that all communication be done in such a way that does not invoke panic. It is important for everyone to understand that activation of the pandemic influenza plan does not mean that pandemic influenza is present nor does it mean that it will show up in a particular community. However, now is an important time to provide education about how influenza spreads and steps people can take to prevent the spread.

## Identifying Potential Cases

Throughout the response stage, the success of the pandemic influenza plan is mainly dependent on quick identification of potential cases of influenza. Nursing staff must be constantly evaluating for signs and symptoms of influenza. This is important for both surveillance and diagnostic purposes.

The influenza virus attacks the respiratory system causing respiratory specific signs and symptoms such as nonproductive cough, sore throat, runny nose, and nasal congestion. However, the individual may also present with nonspecific signs and symptoms of infection such as fever, malaise (general feeling of being ill), body aches, chills, fatigue, headache, and loss of appetite.

It is important to understand that children and older adults may present with different or additional symptoms than those previously mentioned. Children may also present with vomiting, diarrhea, and signs of an ear infection. They may also experience a high fever and febrile seizures. Older adults may not present with a fever but may have other nonspecific signs and symptoms of infection such as a change in cognitive status and functional ability.

Once an individual has been identified as having suspected influenza, your organization must follow the protocol in place for diagnosis and infection control.

## Diagnosing Influenza

Diagnosis of influenza based on clinical presentation alone is extremely difficult as the signs and symptoms seen with influenza can also occur with other respiratory illnesses. There is significant variation in the sensitivity and predictive value with the use of clinical definitions for diagnosis especially in older adults (CDC, 2016a). Therefore, the diagnosis of influenza may require the use of available laboratory testing.

The CDC (2016b) identifies that not all individuals presenting with signs and symptoms of influenza need to have diagnostic testing, but testing should be done when the results are likely to yield clinically useful results for decisions concerning diagnosis and treatment. Additionally, testing can be used in some settings such as nursing facilities to determine if an outbreak is present (CDC, 2016b).

There are a variety of lab tests available including rapid influenza diagnostic tests, viral culture, rapid molecular assays, among others. The most commonly used test outside of the acute care setting is the rapid influenza diagnostic test (RIDT). RIDT is less costly than other tests and provides quick results, typically between 15-30 minutes depending on the brand. Additionally, many of the RIDTs available are CLIA waived which means they can be performed in any setting.

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While there are many benefits to the use of RIDTs, one major disadvantage is that RIDTs commonly report false negative results, more so during peak community influenza activity, so consideration needs to be given to the use of other diagnostic testing, such as a rapid molecular assay, in the presence of negative results especially during outbreaks (CDC, 2016b). The CDC (2017b) provides recommendations on strategies to minimize false RIDT results and includes:

- Using a test with a high sensitivity and specificity
- Testing early in the illness, as soon as symptoms present, preferably within 3-4 day of onset
- Following the manufacturer's instructions in regards to specimen collection and use of the test itself
- Confirming negative results with other diagnostic tests, such as an RT-PCR or viral culture, if laboratory-confirmed diagnosis is desired

All types of RIDTs are capable of detecting the influenza A virus, but cannot distinguish specific strains and subtypes of the virus. This makes these tests beneficial for clinical diagnosis, but makes them useless from a surveillance perspective. During pandemic influenza, consult with your local public health agency when a laboratory confirmed case of influenza is identified to determine the need for any additional diagnostic testing, such as the use of viral cultures, to determine the strain and subtype of the virus.

## Preventing the Spread

While the diagnosis of influenza is being confirmed through laboratory testing, if required by your organization's plan, the organization needs to take steps to prevent the spread of the virus if in fact an individual's signs and symptoms are caused by influenza. Reducing the spread of influenza involves breaking the chain of infection specifically before, during, and after transmission.

The influenza virus spreads via droplet transmission. This means the virus leaves the host via respiratory droplets that are the result of a person talking, coughing, or sneezing, or may be the result of certain types of medical procedures such as suctioning. This respiratory droplet then travels up to six feet away where it can land in another person's mouth or nose or can be inhaled into the lungs by another person. Because the respiratory droplet can only travel up to six feet away, an individual has to have close contact with the infected individual for transmission to occur. This means that the virus cannot be transmitted through the air over long distances.

Transmission of the virus may also occur via indirect contact. This means that an individual is exposed to the influenza virus when they touch a contaminated surface. Transmission then results when the individual then touches their mouth or nose. For example, the sharing of eating and drinks utensils can result in this type of transmission. Additionally, transmission can also occur when the hands of a staff member become contaminated with the virus, and the staff member provides care to a person who is not infected without washing their hands. While indirect contact is a potential type of transmission, many different factors can affect the transmission of the influenza virus via environmental surfaces.

Respiratory hygiene and cough etiquette are two big factors in preventing the spread of influenza. Everyone should adhere to respiratory hygiene and cough etiquette guidelines. These include:

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- Covering the mouth and nose with a tissue before coughing or sneezing or coughing or sneezing into the inner elbow.
- Disposing of used tissues in no-touch waste baskets.
- Performing hand hygiene after coughing, sneezing, or blowing the nose.

Every encounter with an individual presents an opportunity to provide education on preventing the spread of the virus. Healthcare facilities may also hang posters at entrances reminding people to use respiratory hygiene and cough etiquette. Healthcare facilities may also choose to set up respiratory hygiene stations that contain posters, facemasks, facial tissue, and alcohol-based hand rubs.

Education should also be provided to family members and other visitors that it is best to stay home if signs or symptoms of influenza are present unless a healthcare provider has ruled out influenza as the cause of these symptoms. There may even come a point during the pandemic in which an organization decides to restrict visitors to the facility. This is a decision that will be made with input from local public health agencies and state survey agencies.

## Standard and Droplet Precautions

Understanding how the influenza virus is transmitted is critical to the implementation of interventions to stop the spread. Your organization's employees should already be using standard precautions during care regardless of an individual's suspected or confirmed infection status. Adhering to standard precautions involves appropriate hand hygiene and the use of personal protective equipment (PPE) such as gloves and gowns when contact with potentially infectious materials may occur.

In addition to standard precautions, however, individuals with suspected or confirmed influenza should be placed on droplet precautions. **Do not** wait for a positive lab confirmation to start these precautions. Rather, start them at the time signs and symptoms first present. If laboratory testing rules out influenza as a diagnosis, droplet precautions can be discontinued. However, remember that RIDTs can have false negatives, so additional testing may be required before droplet precautions can be discontinued.

Droplet precautions should remain in effect for the current established guidelines by the CDC. For seasonal influenza, this guideline is seven days after illness onset or until 24 hours after the resolution of fever and respiratory symptoms, whichever is longer (CDC, 2016c). However, in the presence of pandemic influenza, the CDC may develop specific guidelines for preventing its spread that are more stringent than the guidelines for seasonal influenza.

When droplet precautions are in place, staff members must still follow all standard precautions in regards to hand hygiene and PPE use. Additionally, staff members and others entering the care area of a person on droplet precautions must wear a facemask which is then removed upon leaving the care area. Goggles and face shields are not required PPE for droplet precautions unless there is potential for splashing or spraying of infectious materials, as is consistent with standard precautions.

## Avoiding Others

Individuals that are on droplet precautions need to understand that close contact with other individuals can spread the infection. Therefore, careful consideration needs to be taken to prevent close contact with non-infected individuals. This will vary depending on the specific

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setting where care is taking place.

In the home, encourage the individual to create a “sick room.” Doing so will contain the virus to this one location of the home. Non-infected individuals that need to go into the “sick room” can then wear a facemask to prevent transmission. Additionally, if the infected individual needs to leave the “sick room” such as to access a bathroom or other location in the home, the individual can wear a facemask to prevent transmission.

For healthcare facilities, room placement is critical to preventing the spread of infection between individuals. It is preferable for individuals on droplet precautions to be placed in a private room. This may be a room that is in fact designated as a single-person occupancy room or may be a multi-person occupancy room that only one person resides in due to the presence of infection. However, depending on the severity of pandemic influenza within the facility, both of these options may become scarce. When space becomes scarce, you may need to cohort infected individuals.

During pandemic influenza, the CDC may develop more stringent guidelines on room placement and cohorting so be sure to follow any additional guidelines developed during the pandemic. However, Sigel, Rhinehart, Jackson, & Chiarello (2007) provide the following principles when making decisions about room placement for individuals on droplet precautions:

- Prioritize individuals who have excessive cough and sputum production for single-person room placement.
- Place together in the same room (cohort) persons who are both confirmed to have influenza and are suitable roommates.

As a last resort, if it becomes necessary to place individuals with influenza in a room with someone who does not have influenza:

- Avoid placing them in the same room with individuals who have conditions that may increase the risk of adverse outcome from infection or that may facilitate transmission (e.g., those who are immunocompromised).
- Ensure that the individuals are physically separated (i.e., greater than three feet apart) from each other. Draw the privacy curtain between beds to minimize opportunities for close contact.
- Have the infected individual wear a mask.

Individuals with influenza should be asked to stay in their room as much as possible. However, if they do need to leave the room, they should wear a facemask to prevent transmission of the virus.

When a healthcare facility has multiple units within the facility, consideration should be given to allocating one or more units within the facility as designated units for people with suspected or confirmed influenza. This is not a consideration that should be taken lightly and requires careful discussion with members of the pandemic influenza committee, local health departments, and state survey agencies. If a facility opts to do this, staffing should be allocated such that staff who work on units with persons with influenza do not also work on units with persons without influenza. The number of non-essential personnel and visitors entering these units should be minimal. Additionally, the cohorting of these individuals on one unit does not mean that measures to prevent the spread of the virus should be stopped.

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In the outpatient setting, such as a clinic or office, it becomes important to identify and separate individuals with signs and symptoms of influenza at the point of entrance (Sigel et al., 2007). Place signage in the entranceway for those with influenza symptoms to use respiratory etiquette, perform hand hygiene, and wear a mask to prevent transmission of influenza. Have respiratory hygiene stations available for use. During the pandemic, it might be useful to create a separate section in the waiting lounge for those with influenza symptoms and provide masks for them to wear. If symptomatic individuals must sit near those without symptoms, ask that they sit at least six feet from others.

## Environmental Considerations

Because contact with contaminated environmental surfaces can potentially lead to the spread of the influenza virus, all surfaces that may potentially be contaminated should be frequently cleaned and disinfected. The appropriate PPE should be worn by staff members involved in environmental cleansing including gloves, gowns, and facemasks. Special attention should be given to surfaces that are frequently touched such as telephones, doorknobs, toilets, remotes, etc.

Additionally, the sharing of medical equipment during these times should be minimized if at all possible. When a healthcare facility has created a unit specifically for the care of persons with suspected or confirmed influenza, medical equipment should not be moved from this unit to a unit in which infection is not present if at all possible. If not possible, equipment must be cleaned and sanitized following CDC guidelines.

Standard precautions should also be used when handling dishes and eating utensils used by persons with suspected or confirmed influenza. Employees handling these items should wear gloves when washing. It is important to note that proper cleaning of these items will kill the virus if FDA standards are followed. It is not necessary for persons with suspected or confirmed influenza to use disposable dishes and utensils. No additional precautions other than those used with standard precautions need to be taken when handling linens and laundry from a person with influenza.

## Vaccination and Antiviral Medications

While the influenza vaccination is the primary method of preventing seasonal influenza, the seasonal influenza vaccination will have no effect on prevention of pandemic influenza because the virus causing the pandemic is a new virus. However, the development of a vaccination effective against the new virus can occur rather quickly and may become available during the first few months of the pandemic. However, the vaccine may only be available in limited supply due to the time it takes to manufacture the vaccine and due to the fact that during a pandemic two doses of the vaccine will most likely be needed (WHO, 2004).

Additionally, the use of antiviral influenza medications will also be critical in controlling pandemic influenza. Unfortunately, these medications may not be available in sufficient quantities during this time and supplies can quickly become exhausted. Additionally, some of these medications may not be as effective, depending on the strain of the new virus, as they are for seasonal influenza.

During pandemic influenza, the CDC will establish guidelines that your organization can follow in regards to vaccination and the use of antiviral medications. Depending on supply quantities, consideration will likely be given to priority groups for both vaccination and use of antiviral medications. The WHO (2004) establishes the following groups as potential priority groups for



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vaccination and antiviral medications, but again, always follow the CDC's current guidelines:

- Healthcare workers and other essential service providers such as fire and police personnel
- Individuals at high risk for death and severe complications requiring hospitalization including older adults and adults and children greater than six months old who have chronic cardiovascular, pulmonary, metabolic, or renal disease, or are immunocompromised

A member of the pandemic influenza committee must check the CDC recommendations regularly for the most current information about vaccination and antiviral medications. They should obtain information such as access, availability, and distribution.

## Influenza Treatment

Antiviral medications are the only medical treatment available for influenza. Therefore, during a pandemic, when individuals cared for by your organization develop influenza, medical care will center on symptom management and prevention of complications.

Symptoms of seasonal influenza are typically mild and resolve after 3-7 days in most people with cough and malaise potentially lasting for more than two weeks (CDC, 2016a). However, because of the lack of immunity to the virus causing pandemic influenza, symptom severity is often moderate to severe and the length of time symptoms are present may be longer than the typical 3-7 days. Individuals who have never been exposed to a particular type of the influenza virus may have worse symptoms than individuals who have had exposure to a similar type of virus in the past.

There are several comfort measures you can provide to help the individual with their symptoms while the influenza infection takes its course. Individuals with influenza should be encouraged to rest until symptoms resolve. They should avoid strenuous exercise and stress. Fever and muscle aches can be managed with nonsteroidal anti-inflammatory drugs (NSAIDs) and acetaminophen. However, use of these medications can potentially "mask" the worsening of an individual's condition. Therefore, their use should only be considered if the fever causes significant discomfort that is unable to be relieved with other measures. Respiratory symptoms, such as cough, runny nose, and nasal congestion, can be managed with over-the-counter medications as well to promote comfort. Humidified air can ease the irritability of the upper respiratory tract when the individual has a dry cough.

Dehydration is a significant concern for these individuals. Therefore, fluid intake throughout the day should be encouraged. Fluids can vary as long as they do not contain caffeine or alcohol as these can worsen dehydration. Offer liquids such as juice, water, warm decaffeinated tea, popsicles, gelatin, or chicken soup. In severe cases, intravenous fluids may be needed to maintain fluid balance.

Care givers should monitor intake and output, mental status, and vital signs to assess for fluid loss and dehydration. If the individual has fluid loss through emesis or diarrhea, the potential for electrolyte imbalances increases. This must be monitored for closely. Fluids that contain electrolyte replacements can be offered during these times. If imbalances become severe, additional measures will need to be taken.

Individuals with chronic medical conditions need to be carefully monitored as the influenza

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infection can exacerbate many conditions. For example, individuals with diabetes may experience elevated blood glucose levels requiring an increase in frequency of monitoring and potentially a temporary change in medications. At the same time, if the individual is not feeling well enough to consume food, blood sugar levels can drop resulting in hypoglycemia.

Secondary complications related to influenza include pneumonia, sinus infections, and ear infections. Sometimes the influenza virus can also cause an inflammatory response throughout the body that can lead to multi-organ failure and death. This secondary complication is called sepsis. Typically, with seasonal influenza, these complications are limited to high-risk groups such as older adults, children, and people with chronic medical conditions. However, with pandemic influenza, these complications can occur in otherwise healthy individuals. Again, this is related to the lack of immunity to the virus.

The use of antibiotics may be necessary if complications to influenza develop such as sinus infection or pneumonia. Nursing staff must be continuously assessing those individuals with influenza for signs of complications and notify the healthcare provider at the first sign of a change in condition so that treatment can begin earlier. It is important to note that healthcare resources during a pandemic may be stretched thin and hospital beds may not be available. Therefore, your organization may need to provide care to individuals who would otherwise be hospitalized. This makes early recognition of changes extremely important.

## Screening Employees

Upon the first case of suspected or confirmed influenza during pandemic influenza, your organization will need to begin keeping track of all employees who have provided care for the individual. You should have a system in place that encourages staff to report any signs or symptoms of the illness and should communicate if an individual the employee has close contact with at home, such as a spouse or child, develops signs and symptoms of influenza.

Depending on the severity of the outbreak in your organization, you may also consider mandatory screening for fever and respiratory symptoms at the beginning of the employee's work day. Individuals presenting with symptoms should be excluded from work unless specific circumstances prevent this from happening.

## Communication

Communication during the response phase of the pandemic will be a critical component. The pandemic influenza committee members as well as other key team members need to meet at least on a daily basis, if not more frequently depending on the severity of the outbreak within the organization. Three key factors should be discussed during this time – medical care, supplies, and staffing.

At the beginning of the meeting, the group should review the number of individuals with suspected or confirmed influenza and review the medical care for each. Specifically address the steps the organization is taking to prevent these individuals from having contact with others who may not be infected. For healthcare facilities, this includes consideration of room placement and cohorting.

The next resource to discuss will be supplies. Do additional supplies need to be obtained based on the rate they are currently being utilized? Specific considerations need to be given during this time to antiviral medications and vaccines. Do not forget to address the basic supplies needed to care for these individual such as facemasks, alcohol-based hand rubs and soap, facial

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tissues, etc.

Finally, review staffing levels. Do staffing levels need to be increased due to the acuity of care individuals may require? How many staff members are out because they are ill themselves? Does the organization need to consider allowing staff members who may be infectious but are well enough to work to return to the organization? In these situations, specific consideration must be given to ensure that these staff members do not have contact with individuals and other staff that are not infected. Staffing levels may need to change on a daily basis. It is important to remember that this is an “all hands on deck” situation. The organization may need to consider canceling requests of time off during this period. Management level staff, such as the Director of Nursing, may be needed to provide direct care. Other management level staff can help support nursing personnel in a variety of ways such as by keeping supply closets stocked, fielding questions from family members and visitors, etc.

Communication with local and state health departments will also be critical at this time as well as any state survey agencies according to regulatory requirements of your healthcare organization. Communication should include information about the number of influenza cases within the organization as well as deaths associated with these cases.

## Second Wave

When the pandemic reaches the post-peak phase, a significant decrease in the number of influenza cases will be noticed. However, it is important to remember that you are not out of the woods. A “second wave” of the pandemic may occur in which the cases of influenza rise dramatically after they have decreased. Expect this phase to last weeks to months or even a year.

During this time, it is critical that you continue to keep your pandemic influenza plan implemented. Focus on preparing for another wave of pandemic influenza. Review your plan and adjust it as needed based on the response to the first wave and CDC recommendations.

Now is a good time to inventory supplies as levels will likely be low. At this point, continue to follow CDC guidelines on vaccination and use of antiviral medications to help prevent the second wave.

## Recovery Phase

Recovery is the time period during the post-pandemic period. This is a time to assess and refine the pandemic influenza plan based on problems encountered and lessons learned during the pandemic. Carefully review the entire plan and make necessary changes. Gather input from staff members who had firsthand experience providing service during the pandemic. Ask them to provide feedback on what did and did not go well. Ask if they have any suggestions that could improve the organization’s response. Identify and incorporate input that will contribute to improving the plan.

Review the steps you took during the preparation stage and identify processes that need to be improved. Perform quality improvement projects that address aspects of the plan that need improvement. Review your supplies and order needed supplies. Review occupational health policies and protocols and update as needed. Lastly, keep communications open with government agencies and follow recommendations to prepare for the next pandemic influenza.

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## Review

Imagine that you are a member of the pandemic influenza committee of Any Healthcare Organization during pandemic influenza. Jane, a nurse for the organization, informs you that Mr. Patterson has developed signs and symptoms of influenza, so she placed him on droplet precautions and performed a rapid influenza diagnostic tests (RIDTs) based on organization policy. The result of the test was negative. She wants to know if she can discontinue droplet precautions. How should you respond?

A. Yes, you can discontinue droplet precautions.

Feedback [Discontinuing droplet precautions at this point increases the risk that the virus will spread to others. Why? Because one of the disadvantages of RIDTs is false negatives especially during peak influenza activity. Before droplet precautions are discontinued, the negative result of the RIDT should be confirmed using another type of influenza diagnostic test according to organization policies. If another test is not used, droplet precautions should continue for seven days after illness onset or until 24 hours after the resolution of fever and respiratory symptoms, whichever is longer, unless specific guidelines by the CDC during the pandemic indicate differently.]

**B. No, you cannot discontinue droplet precautions.**

Feedback [Your actions help minimize the risk that the virus will spread to others. Because one of the disadvantages of RIDTs is false negatives, especially during peak influenza activity, before droplet precautions are discontinued, the negative result of the RIDT should be confirmed using another type of influenza diagnostic test according to organization's policies. If another test is not used, droplet precautions should continue for seven days after illness onset or until 24 hours after the resolution of fever and respiratory symptoms, whichever is longer, unless specific guidelines by the CDC during the pandemic indicate differently.]

## Summary

During the response stage, you will use the pandemic influenza plan to quickly implement an organizational response to the pandemic. The plan you developed in the preparation stage will act as a source of information for everyone in the organization including specific information on identification of cases, diagnosis, use of droplet precautions, and treatment. As the pandemic ends your organization will enter the recovery stage. In this stage, your organization should discuss weaknesses and strengths of the plan and conduct quality improvement in preparation for another pandemic influenza.

## Section 5: Conclusion

### Summary

**Now that you have finished reviewing the course content, you should have learned the following:**

Your organization needs to prepare for pandemic influenza before it occurs. To prepare your organization will develop a plan to implement when pandemic influenza actually occurs. Responding to pandemic influenza requires careful consideration of preventing the spread of infection to others who may not be infected. During the pandemic, staff will refer to the plan for information about many tasks such as infection control. Implementation of a preparedness plan will empower you to effectively prepare and respond to a pandemic. The plan should be routinely updated as best practices change and recommendations from the CDC are updated.

# Preparing for Pandemic Influenza

## Course Contributors

Elizabeth Kellerman started in nursing in 2007 after graduating from Samuel Merritt University in Oakland, California. Her work in the critical care unit of a community hospital provided significant experience caring for older adults. Her experience and knowledge led her to nursing education where she taught at a community college while working to receive her Master's in Nurse Education at Western Carolina University. As a nursing instructor, she spent time in many types of care settings including medical-surgical inpatient and community living centers. Her passion for education and training has most recently led her to a position as Subject Matter Expert and Content Writer for Relias.

This course was reviewed and updated by Jennifer Moore RN-BC, DNS-CT, CDP. Jennifer started working in the senior care industry in 2000. She is a certified Gerontological Nurse, a Director of Nursing Services – Certified, and a Certified Dementia Practitioner. She has held positions including MDS Coordinator, Director of Nursing, Medicare Nurse Coordinator, Nurse Consultant, Area Manager, and Director of Quality Assurance. Her overall responsibility within each of these positions was to ensure residents received the highest quality of care. This included active participation in quality improvement initiatives, review of clinical records to identify areas of weakness, corroboration with the medical director to institute policies and procedures for resident care, and staff education/training. Additionally, she was responsible for maintaining an effective compliance program under a Quality of Care Corporate Integrity Agreement with the Office of Inspector General for a period of five years. She currently serves as the manager of curriculum design for post-acute care for Relias. Within this position, her responsibility is to oversee the development of online training modules for the post-acute care industry. She has served as the subject matter expert for courses on re-hospitalization, clinical skill reviews, and various OSHA and regulatory compliance topics. In addition, she has presented at various state conferences on mandatory compliance, quality assessment and assurance (QA&A), and quality assurance and performance improvement (QAPI).

## Resources

<http://www.flu.gov/> (Search term: state pandemic plans)

<http://osha.gov/> (Search term: pandemic influenza guidance for healthcare workers)

<http://www.who.int/en/> (Search term: pandemic influenza)

[http://www.flu.gov](http://www.flu.gov/) (Search term: pandemic influenza)

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