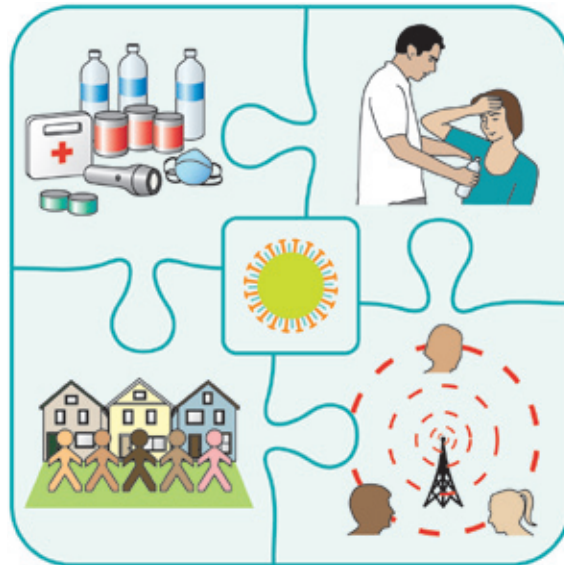




Influenza Pandemic Preparation and Response: A Citizen's Guide



Version 1.3
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Foreword

by

Dr. David L. Heymann

World Health Organization, Executive Director, Communicable Diseases

Most public health specialists from around the world believe that there will be another human influenza pandemic, a pandemic caused by an avian influenza virus that can cause human illness and has mutated to a form that spreads from person to person. Such a random event has occurred three times during the past century, causing three different influenza pandemics.

Since 2003 three major classes of avian influenza virus - H5, H7 and H9 - have caused sporadic human infections, and because of the instability of the influenza virus, any one of these viruses is thought to be capable of mutating in such a way as to cause a human pandemic. Presently the most widespread of these viruses is the H5N1 avian influenza virus, or simply H5N1. Since an H5N1 outbreak in chickens in Hong Kong was first reported to infect humans in 1997, the H5N1 virus has spread in poultry populations throughout Asia, the Middle East and some parts of Africa and Europe causing a pandemic of influenza in chickens; and occasional human infections in persons who have come into contact with infected chickens. Since 2003 there have been just over 300 reported human infections with H5N1, all having caused severe illness, with an overall death rate of 61%.

Two of the three influenza pandemics of the past century - one that occurred from 1957-1958, and one in 1968 - 1969 - are still in the memory of many persons living today. These pandemics spread rapidly throughout the world, causing severe illness in persons of all ages, massive absenteeism from school and the workplace, and an estimated 2.5 million deaths, mostly in persons over the age of 60 years. The third pandemic - that of 1918-1919 - caused an estimated 40 million deaths in persons of all ages. Articles published in scientific and medical journals of the time speak of severe illness and death, with a breakdown of routine health and mortuary services in almost all major cities, closure of public gathering places, and quarantine and isolation of those in-

fectured or exposed to infected persons in an attempt to stop the spread of infection. Recent examination of records from the years 1918-1919 in many cities across the United States has shown that communities that put into practice social distancing measures such as closure of schools and public gathering places before infections were first detected, were able to maintain lower levels of infection than others. Those persons at greatest risk were those who lived closely together in confined spaces, such as men serving in the military.

During the inter-pandemic period since 1968, six levels of alert for pandemic influenza have been defined by the World Health Organization in order to best describe the pandemic risk: phase 1 and 2 during which no new influenza virus is infecting humans; and phases 3 to 6 when there is human infection with a new influenza virus - phase 3 when there is no human to human transmission to phase 6 when there is increased and sustained transmission of the new influenza virus in human populations. The world is currently at phase 3 - a new (avian) influenza virus, H5N1, that occasionally infects humans and causes severe illness, but that is not capable of sustained human to human transmission.

Should the H5N1 virus mutate in such a way that it can readily transmit from human to human in a limited geographic area, a collective international response would be made in an attempt to contain the outbreak by stopping human to human transmission. The objective of such a containment activity would be to circle the focus of human infection by using an antiviral medicine, and/or a vaccine should one be available, in all persons with the potential of exposure to the H5N1 virus. Such a containment activity would be conducted under the International Health Regulations (2005), an international law that requires countries to work together collectively in assessing and responding to any public health emergency of international concern, such as the current threat of an H5N1 pandemic.

The International Health Regulations (2005) came into effect on 15 June 2007, four years after the outbreak of Severe Acute Respiratory Syndrome (SARS). The worldwide response to SARS, that was led by the World Health Organization where I work as head of the communicable disease programmes, permitted development of control strategies using information collected in real time by epidemiologists working in all affected countries. Within five months the SARS outbreak was fully contained using these strategies, and the virus disappeared from human populations. Though a pandemic of influenza could not be contained using the same strategies, an attempt at early containment would require early detection with a focus on human to human transmission, and effective use of antiviral drugs and/or a vaccine to “ring fence” the outbreak and prevent further spread. Because containment has never before been tried as a measure to prevent or slow the spread of an influenza pandemic, the success of this strategy cannot be predicted. If containment activities did not cover an area wide enough to stop transmission, it would be only a matter of weeks or months until the virus had spread throughout the world. We are all vulnerable to the risk of pandemic influenza no matter where we live, work or go to school.

The most important public health measure at present, however, has nothing to do with human infections. That measure is to prevent a pandemic by eliminating the H5N1 virus from chicken populations either by culling of infected flocks, or by preventing infection in flocks through various measures that include vaccination of chicks and limiting exposure of chickens to possible sources of infection. As long as H5N1 continues to circulate anywhere in animals, there is a potential for the virus to mutate in such a way that it could cause a human pandemic.

Should an influenza pandemic begin during 2007, there would at best be 1.5 billion doses of vaccine available for use in a world of over 6 billion population - and even this amount would require 24 hour production by the world’s influenza vaccine manufacturers. Absenteeism from schools and the workplace would rapidly occur worldwide, as well as a surge of patients seeking care through the medical system. Absenteeism at the workplace could interfere with services ranging from commerce and

trade to health care, police enforcement and many other day to day activities. Though efforts are being undertaken to increase influenza vaccine production capacity so that enough vaccine would be available to prevent infection, and anti-viral medications are being stockpiled nationally and internationally, the risk of a pandemic remains, though lack of predictability precludes quantification of that risk.

Influenza Pandemic Preparation and Response: A Citizen’s Guide describes possible consequences of an influenza pandemic, and makes it clear that individuals and families can and must know what to do should a pandemic occur. It also describes how those with this knowledge can help to educate others in the simple measures that will mitigate and limit the negative impact of an influenza pandemic on the world’s communities. Public health authorities throughout the world agree that the responsibility to respond to a public health emergency such as pandemic influenza cannot be fully placed on health workers and other primary responders, who may themselves become incapacitated by illness and death. It is thus each individual’s responsibility, alone or collectively, to plan for and respond to a pandemic in the home and/or in the community. *Influenza Pandemic Preparation and Response: A Citizen’s Guide* clearly describes, in lay terms, the actions that each of us can take.

-David L. Heymann, M.D.

World Health Organization, Executive Director, Communicable Diseases

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Chapter 1



An Introduction to Pandemics

“Avian influenza is not a challenge. It is a predicament of extraordinary proportions....As *The Lancet* wrote after the 1918 influenza pandemic, if only we had acted earlier with a “collective health conscience”, many millions of lives could have been saved. Today, we are repeating the same mistakes of a century ago.”

-The Lancet, May 2006

In this chapter you will learn:

- What a pandemic is
- About current governmental viewpoints on pandemic response
- The history of pandemics
- The impact of pandemics – to you and your community
- Facts about Bird Flu

After reading this chapter, you will be able to:

- Talk with your friends, family, and community members about the need for pandemic preparedness

This Pandemic Survival Guide is designed to help you prepare for a future pandemic - for you, your family, and your friends

Pandemics are unpredictable in their severity but are virtually certain to occur. There are about three pandemics per century. Case in point -- there were three pandemics in the 20th century that affected the world's population.

The Great Flu of 1918 caused between 40 and 50 million deaths worldwide, and some death toll estimates are as high as 100 million¹. More Americans died from this influenza pandemic than in all the wars of the 20th century combined¹⁴. For comparison, consider that over 1800 people died during Hurricane Katrina, and an estimated 3000 people died during the 1906 San Francisco earthquake. On a more severe scale, 283,000 people died during the 2004 Indian Ocean earthquake and tsunami¹. Projections expect 253,000 people to die in California alone, and 10,713,000 people are expected to fall ill in that state.²

Research has shown that cities and citizens that were prepared and implemented an immediate response to the pandemics in the past experienced much less loss of life than those that weren't prepared and took longer to react. This tells us the importance of preparation for future pandemics.

The responsibility for preparation falls to each individual and family. In the event that the world experiences another flu pandemic, resources will be spread thin. Families that have taken the suggested steps to prepare will be at an advantage.

Read on and find out ways you and your family can be better prepared in the event of a worldwide flu pandemic. You'll be glad you did.

The authorities agree...

“Pandemics are global in nature, but their impact is local. When the next pandemic strikes, as it surely will, it is likely to touch the lives of every individual, family, and community. Our task is to make sure that when this happens, we will be a Nation prepared.”

- *Michael O. Leavitt, Secretary, U.S. Department of Health and Human Services*

“No act of modern warfare...has the potential to threaten as many lives and cause as much disruption to the global economy as the H5N1 avian influenza would if it makes the evolutionary leap that allows it to spread among humans as quickly and as lethally as it has among birds.”

- *Stephen Flynn, homeland security expert and a senior fellow at the Council on Foreign Relations*

The Importance of Information

“If people have good information, they will generally make good decisions about what to do for themselves and their families. Helping families, neighborhoods, and communities think about how life will be impacted during a pandemic should equip them to better react during an actual pandemic.”

- *Pierre Omidyar, Founder and Chairman, eBay;
Cofounder and Founding Partner, Omidyar Network*

The Impact of a Pandemic

Overview

- Communities will be affected simultaneously
- At least 30% of the overall population will become infected
- Absenteeism is expected to be upward of 50%
- A pandemic is likely to last for 12 to 18 months
- Communities could be affected by several waves lasting 6 to 8 weeks each
- Vaccines and antiviral drugs for pandemic influenza will be in short supply, may be of limited effectiveness, and will likely not be available to most communities
- Most of the ill may wish to seek medical care
- All healthcare systems will be overwhelmed
- Health facilities are unlikely to be available to most, and may be inadvisable to enter owing to increased chances of exposure to the virus
- People and communities will likely be on their own without the help of mutual aid from other communities, hospitals, or other public services

What is a pandemic?

A pandemic is a global outbreak of an infectious disease. A pandemic of influenza A occurs when a new influenza strain emerges for which people have little or no immunity, and for which there is no vaccine. The infection spreads easily from person to person, causes serious disease, and can spread around the world in a very short time.

How dangerous will it be?

Health professionals are concerned that the continued spread of a highly pathogenic avian H5N1 virus across Asia, Africa and Europe represents a potentially significant threat to the general public. The H5N1 virus has raised concerns about a potential human pandemic because

- It is especially virulent.
- It is being spread by migratory birds.
- It can be transmitted from birds to mammals and in some limited circumstances to humans, and
- Similar to other influenza viruses, it continues to evolve.

*Note that there is evidence that the 1918 flu was most likely an interspecies transfer between birds and humans compared with the less severe pandemics of 1957 and 1968, suggesting that the impending pandemic may be more severe.

Three prerequisites for the start of a pandemic

1. A new influenza virus is introduced to which humans have little to no immunity.
2. This new virus must be able to replicate in humans and cause disease.
3. New virus must be able to efficiently transmit itself from one human to another.

Where is this happening?

Since 2003, a growing number of human H5N1 cases have been reported in Azerbaijan, Cambodia, China, Djibouti, Egypt, Indonesia, Iraq, Lao Democratic People's Republic, Nigeria, Thailand, Turkey, and Vietnam. More than half of the people infected with the H5N1 virus have died. Most of these cases are believed to have been caused by exposure to infected poultry. There has been no sustained human-to-human transmission of the disease, but the concern is that H5N1 will evolve into a virus capable of human-to-human transmission.

Can humans get bird flu?

The Avian Influenza H5N1 strain started as an infection of birds, but has mutated so that it can now infect humans. Avian influenza strains can be transmitted from wild birds to domestic birds, and highly pathogenic strains can rapidly kill entire flocks. Strains including H5N1 and others are deadly to domestic fowl and can be transmitted from birds to humans. There is no human immunity and no vaccine is currently available.

Since 2003, a growing number of human cases of avian influenza strain H5N1 have been reported in 12 countries worldwide from China to Egypt.

Who will get sick?

- The percentage of infected individuals will most likely be 30% of the overall population during a severe pandemic.
- Illness rates may be highest among school-aged children (40%) and decline with age. An average of 20% of working adults will become ill during a community outbreak.
- All it takes is for one infected person to get on an airplane and fly into the next country to start the spread of the illness.

When will it happen?

It is currently impossible to predict the emergence of a future pandemic other than to strongly suspect that one will eventually occur, or to predict when or where a future pandemic will occur, what subtype it will be, and what degree of death and disease it will produce.

Can this be avoided?

There is no sure way to stop a pandemic from occurring. The best way to avoid a hard-hitting pandemic is to take personal responsibility for isolating yourself if you may have been exposed, preparing your family and house for extended stays in the home, and encouraging your neighbors and friends to do the same.

What about a vaccine?

Vaccines and antiviral drugs for pandemic influenza will be in short supply.

Creating a pandemic influenza vaccine would take at least 6 months, and would take even longer to vaccinate a majority of the population.

Vaccines against avian influenza A/H5N1 currently under production will confer immunity to only that strain of H5N1 and not necessarily to a new, mutated form of that strain. They will also not offer protection against any of the other potential types of influenza that could create a pandemic, such as H7N7, H9N2, and H2N2.

In addition, all facilities, except one, for producing influenza vaccines are currently overseas; should a pandemic occur, it is unlikely that a foreign country

would release vaccine outside of its borders without first ensuring that its own population is vaccinated.

Will there be enough doctors?

Should a pandemic occur on the 1918 scale, all medical systems will be overwhelmed. Current levels of emergency, hospital, and outpatient care will not be available owing to insufficient numbers of beds, ventilators, medical supplies, and personnel (absenteeism in healthcare personnel is expected to meet or exceed that of the general population). Long-term care and skilled nursing facilities, among others, will also be affected.

How can I help prevent spreading the illness?

- “Social distancing” strategies aimed at reducing the spread of infection such as closing schools, community centers, small businesses, and other public gathering places, and canceling public events will likely be implemented during a pandemic wave.
- Additionally, residents may be required to stay in their homes for a significant period of time during a pandemic outbreak, depending on the action taken by their local health officer.
- Residents and communities will need to prepare in advance to become self-reliant during the pandemic.

What will happen when people die?

The Medical Examiner’s Office, morgues, and funeral homes will not have the resources to handle the high number of deaths, which in a severe pandemic is estimated to be approximately 2-5% of those infected. The dead will need to be cared for at home until they are able to be picked up.

What will happen to my community?

Rates of absenteeism at work will soar during peak periods of a pandemic. This will likely cause significant disruption of public and privately owned critical infrastructure including transportation, commerce, utilities, public safety, and communications.

How long could this last?

A pandemic can last up to 2 years; locally, communities could be affected by several waves lasting 6 to 8 weeks each.

What else do I need to know?

- During a severe influenza pandemic, individuals, families, and neighborhoods will likely be on their own and should not count on aid from other communities. Healthcare systems will be overwhelmed, and routine public services will be unavailable.
- Owing to widespread effects upon society and the toll on human life, some people may experience panic and fear based on lack of informed preparation.
- Skilled workers will be needed; they will be those serving their communities.
- Volunteer response workers will be invaluable resources in maintaining continuity in community services.

“Any community that fails to prepare and expects the federal government will come to the rescue is tragically wrong.”

- Michael O. Leavitt, Secretary of Health and Human Services at Pandemic Influenza Summit in Baltimore, MD

A Brief Pandemic History



Influenza pandemics have been recorded for at least 300 years and occur at unpredictable intervals.

- In the 20th century, there were three pandemics: 1918-1919, 1957-1958, and 1968-1969. Historians have estimated that Spanish influenza killed between 40 and 50 million people worldwide in the pandemic of 1918-1919. More people throughout the world died from influenza than were killed in World War I. In fact, more Americans died from the Spanish influenza than in all of the wars of the 20th century combined.
- 0.64% of the U.S. population, or approximately 675,000 people, died from infection in the pandemic of 1918-1919.
- The strain was unusual for influenza in that this pandemic killed many young adults and otherwise healthy people.
- People were sometimes struck suddenly with illness and within hours were too feeble to walk; many died the next day.
- Symptoms included a blue tint to the face (due to insufficient oxygen) and coughing up blood because of severe obstruction of the lungs.
- In fast-progressing cases, most victims died from viral pneumonia. Slower-progressing cases often resulted in death from secondary bacterial pneumonias.
- The pandemic had widespread social effects. There was reduced healthcare capacity because healthcare workers also became sick and were unable to work. Organized gatherings were prohibited for fear of spreading the influenza. Quarantines were enforced, but in many cases were not very successful. The town of Prescott, Arizona even outlawed shaking hands⁴.
- Some public health departments distributed gauze masks to be worn in public. Stores could not hold sales, and funerals were limited to 15 minutes. Those who ignored the influenza ordinances had to pay steep fines. Bodies piled up as the massive numbers of deaths occurred. In addition to the lack of healthcare workers and medical supplies, there was a shortage of coffins, morticians, and gravediggers.
- Cities that implemented social distancing in the 1918 outbreak had a much lower incidence of infection spread than cities that did not.

The Pandemic Severity Index₅

The Pandemic Severity Index was created in January 2007 by the Center for Disease Control (CDC) to categorize the level of impact a pandemic could have. The scales are rated based on numbers of deaths that would occur.

The pandemic severity index levels are: (CFR is case fatality rate)

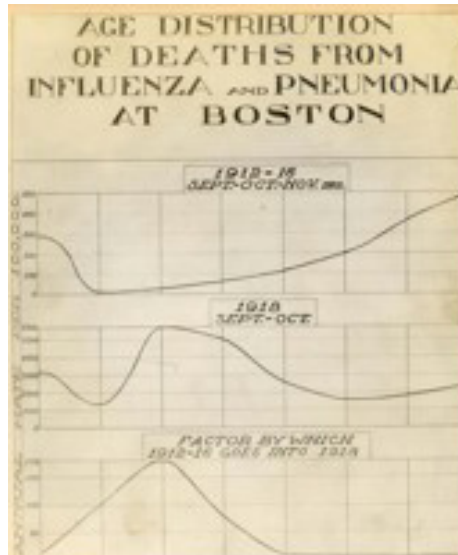
- **Category 1**, CFR of less than 0.1% (such as seasonal flu)
- **Category 2**, CFR 0.1% to 0.5% (such as the 1957 and 1968 flu outbreaks)
- **Category 3**, CFR 0.5% to 1%
- **Category 4**, CFR 1% to 2%
- **Category 5**, CFR 2% or higher (such as the 1918 flu)

The U.S. Department of Health and Human Services estimates that in the United States alone, a severe, category 5 pandemic like that of 1918-1919 could cause 1.9 million deaths, 9.9 million hospitalizations, 45 million outpatient visits, and 90 million cases of illness.₅

Influenza pandemics have been recorded for at least 300 years and occur at unpredictable intervals. In the 20th century, there were three pandemics: 1918-1919, 1957-1958, and 1968-1969. The pandemic of 1957 originated in China and the pandemic of 1968 originated in Hong Kong; estimated U.S. deaths from those pandemics were 70,000 and 34,000, respectively. Nonetheless, today seasonal influenza alone is deemed responsible for about 36,000 deaths in the United States each year. By far, the most hard-hitting pandemic on record was the infamous Spanish influenza, the pandemic of 1918-1919.

The SARS outbreak demonstrated that modern travel patterns may significantly reduce the time needed for a pandemic influenza virus to spread globally to a few months or even weeks. The major implication of such rapid spread of an infectious disease is that many, if not most, countries will have minimal time to implement preparations and responses once the pandemic virus has begun to spread. While SARS infections spread quickly to multiple countries, the epidemiology and transmission modes of the SARS virus greatly helped the ability of public health authorities to contain the spread of this infection in 2003. Isolation and quarantine, as well as other control measures, were also helpful in containing spread.

Deaths During a Pandemic



Pandemics Death Toll Since 1900

1918-1919





U.S.... 675,000+
Worldwide... 50 million+
This as per the CDC

1957-1958

U.S... 70,000+
Worldwide... 1-2 million

1968-1969

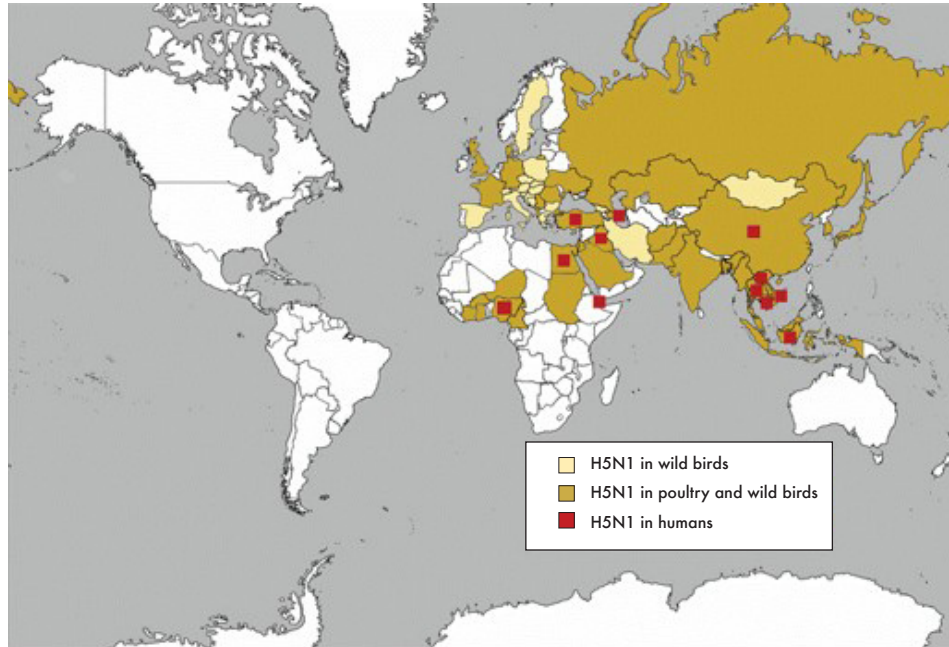
U.S... 34,000+
Worldwide... 700,000+

A severe pandemic will likely lead to thousands, if not millions of deaths, disruption of services, economic distress, and social disruption. **Social distancing**  should be implemented as soon as evidence of an influenza outbreak occurs in your area. **Quarantine**  and **isolation**  orders may be ordered in the best interest of the public and should be taken seriously and obeyed. Citizens who take responsibility for limiting the spread of the flu by using proper measures to control and prevent transmission of influenza --- e.g., by not shaking hands, wearing a mask, frequent hand washing, coughing into their elbows,  and limiting their contact to the outside --- will be invaluable in helping to prevent transmission of infection to others.

A substantial percentage of the world's population will require some form of medical care. Healthcare facilities can be overwhelmed, creating a shortage of hospital staff, beds, ventilators, essential medicines, and other critical medical supplies. Surge capacity at alternative care sites, such as pop-up clinics, schools, hotels, and industrial parks, may need to be created to cope with demand. For most people, their treatment will be at home, or some other location where they can be cared for with minimal danger to others.

Current Infections

This map from the CDC shows countries that are currently affected by the H5N1 influenza strain.



Nations with Confirmed Cases H5N1 Avian Influenza (June 2007)
www.pandemicflu.gov

Home vs. Community Response

“What happens before [a pandemic] is far more productive and individual preparations on a household basis are key. It’s not just state and local governments - every tribe, business and family needs to talk through a pandemic plan.”

-Michael O. Leavitt, Secretary of Health and Human Services

We will all be affected

In the event of a pandemic, all areas of our lives will be affected. Essential services such as access to medical, water and food suppliers; to schools and the workplace; and to transportation, telecommunications and information technology services may all be limited or unavailable.

Begin your planning

Before you begin making your individual or family plan, you may want to review your state’s planning efforts and those of your local public health and emergency preparedness officials. Planning information can be found at www.pandemicflu.gov/plan/checklists.html. You can find your state plan at www.pandemicflu.gov/whereyoulive/index.html.

Planning outside the home

Learn about the plans for your area and areas where you frequently travel, so you know what resources are available and what will you have to plan for on your own. Planning ahead of time and being prepared will give you a much needed plan of action when a pandemic hits.

Vulnerable populations

“Where you live should no longer determine whether you live.”

-Bono - Song for Africa

Part of your neighborhood or community preparedness plans should focus on assisting citizens with special needs or those that are disadvantaged. Attention needs to be paid to who will help the following populations:

- Homeless
- Low income
- Elderly
- Mentally ill
- Handicapped
- Children with chronic medical conditions
- Pregnant women
- Immuno-compromised individuals (e.g., cancer patients, recipients of organ transplants, patients on chronic steroids, or with HIV/AIDS)
- Non English speakers

Plans should include assistance with stockpiling, education, medical care, and surveillance. These populations need the help of others in their community especially when it comes to disaster preparedness and response.

Checklist for Pandemic Understanding



If you decide not to read any further than this page, you will have learned more than you realize. A severe influenza pandemic would constitute a major disaster unlike anything experienced in the modern world, where we are almost totally reliant on computers, ‘just in time’ delivery of food and goods, and cell phones to function in our every day lives. A pandemic will disrupt every aspect of our lives, from access to health care to availability of food and water, and result in an increase in death and disease in our communities. Even our disaster assistance and recovery plans have been based on ‘mutual aid’ – a system where resources and ‘first responders’ from an unaffected area can leap into action to help people in the area of an earthquake, hurricane, or terror attack. But in a pandemic, no such unaffected areas are likely to exist. You now understand that it is up to each individual to care for him- or herself and loved ones. We are fortunate to have the ability to prepare for a pandemic that most public health scientists agree is inevitable at some time in the future. While there is no way to predict the timing and severity of the next influenza pandemic, we have time to prepare -- it’s our responsibility to do so!

- Accept the importance of learning about pandemic influenza and recognize the impact that a severe outbreak would have on your world.**
- Understand that the national government will not be able to come to local aid during a full-scale pandemic.**
- Start talking to your neighbors, family and friends about preparedness, and begin your own.**
- Check with your business, school, house of faith or worship, and other local businesses and organizations about their pandemic readiness and encourage them to develop a plan if they haven’t started.**
- Critically review your local health department’s plan. They are the people “in charge” and you’ll need to know what they are planning.**
- Read more about the history of pandemics – what some cities did that worked (social distancing) and what happened in those cities where response came later.**

Chapter 2



Prevention and Preparation

“The most immediate and largest economic impact of a pandemic might arise not from actual death or sickness but from the uncoordinated efforts of people to avoid becoming infected. . .”

- Milan Brahmbhatt, World Bank

In this chapter you will learn:

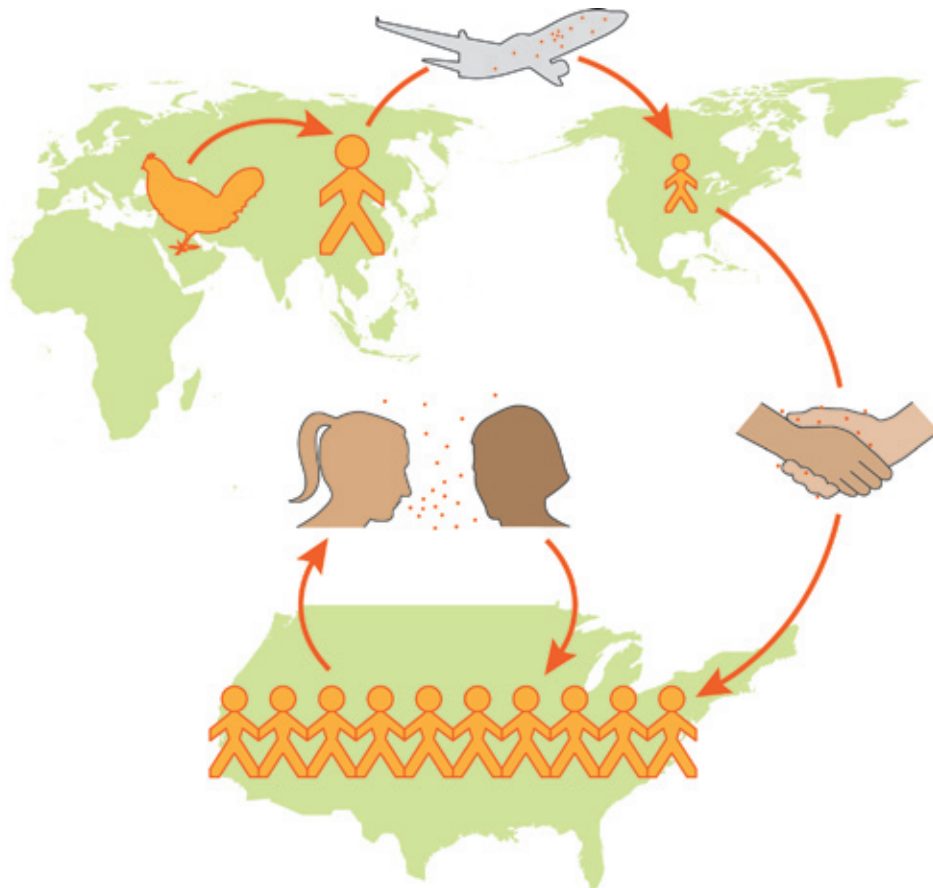
- How to minimize flu transmission
- Strategies for pandemic preparation
- What to stockpile in the event of a pandemic

After reading this chapter, you will be able to:


- Practice safe hand washing techniques to prevent the spread of a virus and other simple infection control and prevention methods
- Start your preparation and stockpiling efforts

Flu Transmission

The first step in preventing flu is to understand what it looks like and how it is transmitted so you can minimize your exposure.



What Exactly is Influenza?

An **acute**  viral infection of the respiratory tract caused by one of three strains of influenza virus (A, B, or C). Please note that many respiratory infections that are commonly referred to as “flu” are actually not the flu. The term is used very loosely in everyday language. The terms influenza and flu are used interchangeably and we are not describing other ordinary seasonal respiratory viral infections.

Seasonal Flu	Pandemic Flu
<ul style="list-style-type: none"> • Outbreaks follow predictable seasonal patterns; occur annually, usually in winter, in temperate climates 	<ul style="list-style-type: none"> • Occurs rarely (three times in 20th century - last in 1968),
<ul style="list-style-type: none"> • Usually some immunity built up from previous exposure 	<ul style="list-style-type: none"> • No previous exposure; little or no pre-existing immunity
<ul style="list-style-type: none"> • Healthy adults usually not at risk for serious complications; the very young, pregnant women, the elderly and those with certain underlying health conditions at increased risk for serious complications 	<ul style="list-style-type: none"> • In addition to usual populations at risk for severe complications during outbreaks of seasonal influenza, healthy people may be at increased risk for serious complications
<ul style="list-style-type: none"> • Health systems can usually meet population and individual patient needs 	<ul style="list-style-type: none"> • Health systems may be overwhelmed
<ul style="list-style-type: none"> • Vaccine developed based on the known circulating flu strains and is available for annual flu season 	<ul style="list-style-type: none"> • Effective vaccines probably would not be available in the early stages of a pandemic
<ul style="list-style-type: none"> • Adequate supplies of antivirals are usually available 	<ul style="list-style-type: none"> • Effective antivirals may be in limited supply
<ul style="list-style-type: none"> • Average U.S. deaths approximately 36,000 per year 	<ul style="list-style-type: none"> • Number of deaths could be quite high (The 1918 flu killed 2.6 percent of those who got sick, killing 40-50 million people.)
<ul style="list-style-type: none"> • Symptoms: fever, cough, runny nose, muscle pain. Deaths often caused by complications, such as pneumonia. 	<ul style="list-style-type: none"> • Symptoms may be more severe, with complications and unusual symptoms more frequent
<ul style="list-style-type: none"> • Generally causes modest impact on society (e.g., some school closing, encouragement of people who are sick to stay home) 	<ul style="list-style-type: none"> • May cause major impact on society (e.g., widespread restrictions on travel, closings of schools and businesses, cancellation of large public gatherings)
<ul style="list-style-type: none"> • Manageable impact on domestic and world economy 	<ul style="list-style-type: none"> • Potential for severe impact on domestic and world economy

Flu Facts

- Seasonal influenza is responsible for an average of 36,000 deaths every year in the United States.
- Although seasonal influenza may commonly have a greater impact on the young, the old and immunocompromised individuals, a pandemic influenza can cause serious illness in people of any age. Currently, H5N1 has caused the most deaths in people between the ages of 10 and 40.
- Antibacterial agents are antibiotics that may be used to treat bacterial complications of influenza; these agents, however, are not active against viruses and therefore cannot be used to treat influenza. The effective use of antiviral agents to treat influenza depends on prompt treatment after exposure or early in the course of the illness - usually during first 48 hrs. Such a strategy has the potential to significantly reduce the spread of influenza in the community and to modify the severity of disease in individuals.
- Each virus has its own characteristics that make vaccines effective against only one type. Scientists are able to predict how the seasonal virus may look, but a pandemic virus will be unknown until it actually hits.
- Being indoors where a virus can breed and be passed on from one person to the next is a perfect way to pass on the illness. Viruses are more easily transmitted in these closed situations.
- You cannot be infected with the exact same version of influenza twice, but you can be infected with a newly mutated form of an influenza strain. That is, once your body has been exposed to a particular strain of the virus, you will develop immunity and will no longer be susceptible to further infection from that strain. If the strain mutates enough, you may be susceptible to the mutated strain.


What does the flu look like?

Influenza can encompass any or all of the following symptoms

- Begins abruptly
- Symptoms include fever, chills, body aches, loss of appetite, headache, and fatigue
- Fever ($>100.4^{\circ}\text{F}$) – usually lasts 2-3 days
- Respiratory tract symptoms include cough without phlegm, sore throat, and congestion
- Temperature greater than 100.4°F

It's important to note that pandemic flu symptoms may look very different from seasonal flu symptoms.

Other pandemic symptoms can include

- Stomach and intestinal issues, such as diarrhea, nausea, and vomiting (most often seen in children)
- Sluggishness or alterations in mental state (seen most often in the elderly and infants)
- Pneumonia can often result as a **secondary infection**  (most often seen in those with immunocompromised systems)

How Does Flu Spread From One Person to Another?

Large droplet transmission :

Respiratory droplets are generated by a person coughing or sneezing and can be propelled right into the eyes, nose, or mouth of other individuals over short distances. Large droplets are about the size of a droplet of water in fog or mist, or the width of a cotton fiber, and they contain viral particles. Large droplets usually travel about the distance of an extended arm, or about a yard. This is why infection control advice suggests that people keep greater than an arm's length from each other to avoid transmission.

Small droplet/airborne transmission :

Transmission through ventilation systems in buildings and over other long distance is not likely, but it is possible for saliva particles to stay in the air for a period of time in a room. These tiny particles can hang around in the air in a room without circulation and can be inhaled. This type of transmission can be lessened with the use of masks and by keeping windows open.

Contact transmission :

Contact can occur by direct bodily contact (such as kissing) or touching something with virus on it (such as shaking hands with someone who has the flu) and then touching your mouth, nose, or eyes. Viruses can last approximately 48 hours on an object. Regularly washing your hands and keeping common surfaces clean can reduce the occurrence of this type of transmission.

Healthy Habits and Virus Prevention

The main responsibility for effective infection control rests on the contribution of each individual toward reducing the spread of the virus. This means staying vigilant in regard to one's own health through proper hand and respiratory hygiene, cough etiquette, and social distancing, and staying at home if one is ill. This also means educating others about how to care for themselves and their community.

Basic infection control procedures: Steps to prevent the spread of infection

Clean hands frequently and thoroughly using soap and water or alcohol-based hand rubs.

- This should take at least 20 seconds, or the time it takes to sing 'Happy Birthday' twice.
- Alcohol-based hand rubs are effective against influenza virus and are not as drying as soap and water. They can be used effectively unless your hands are visibly soiled.
- Remember to clean your hands **before** preparing or serving food, brushing or flossing teeth, inserting or removing contact lenses, or treating wounds and cuts.
- Clean hands **after** any contact with potentially infectious individuals, coughing and sneezing, using the bathroom, caring for a sick person, after taking off masks and gloves, or taking out the garbage.

Cover your coughs and sneezes and ask others to do so as well.

- Use a tissue or cough and sneeze into your elbow or sleeve. The new trend is to use your elbow!
- Wash hands after sneezing/coughing, and disposing of the tissue in a waste basket.

Keep living and work areas surfaces clean.

- Frequently clean commonly used surfaces, such as the TV remote, doorknobs, telephone, and kitchen and bathroom counters with regular disinfectant. You can also use bleach (1 cup bleach + 1 gallon water)
- Wash dishes with soap and warm water.

Practice social distancing.

- If you or anyone in your home is ill, or if you may have been exposed to an ill person, stay at home and isolate yourself as much as possible.
- Stay in a separate room with good light and ventilation.
- Assign one person to care for the sick to minimize spread.
- Avoid crowds and public gatherings.
- Don't send sick children to school.

Wear protective covering if exposed to potentially contagious individuals.

- Wear gloves and a mask when in contact with sick persons. Depending on proximity, a respirator may be used.
- If masks aren't available, you can use layers of cloth to reduce droplet transmission.
- If gloves aren't available, you can use household rubber gloves that have been disinfected using bleach and water (1 part bleach to 10 parts water)

Did you know there is a scientific method for washing your hands?

According to the CDC, hand washing is the "most important means of preventing the spread of infection." Here's how to wash them well and perhaps avoid a cold or the flu. Wash your hands for 20 seconds or the time it takes to sing 'Happy Birthday' twice.

Instructions

- **Step 1:** Turn on the sink and get your hands wet with warm water.
- **Step 2:** Use plenty of soap and rub hands together vigorously for at least 10 seconds.
- **Step 3:** Wash palms, backs of hands, wrists, fingers and under fingernails.
- **Step 4:** Rinse hands thoroughly with warm water.
- **Step 5:** Dry hands with a clean towel or paper towel.
- **Step 6:** Turn off the sink with the towel - this prevents reinfection of your hands.

General Ways to Prepare

Involve your community

Talk to groups you're involved with, such as religious organizations, parent groups, clubs, and other social group about their level of preparedness. Exchange notes and ideas. Talk to your neighbors and consider creating "block teams" to organize neighborhood preparation and response. Do your best to help form a cohesive group that you could rely on in the event of a pandemic.

Involve your family

Talk to your family about where family members and loved ones will go in an emergency and how they will receive care, in case you cannot communicate with them.

For family members living far away, consider preparing an emergency travel bag that would include an open-round-trip bus, train, or airline ticket, money, a change of clothes and essential toiletries, along with a picture ID.

Also involve your children in the planning process and make it a family activity. Remember, children model your behavior. Be sure to include games and activities for yourself and your children should you be required to stay at home for long periods of time.

Stay informed

Be up to date on the current happenings in the world of pandemic flu. Check your favorite news source frequently so that you stay knowledgeable about current events relating to the flu.

www.who.int

www.pandemicflu.gov

www.fluwikie.com

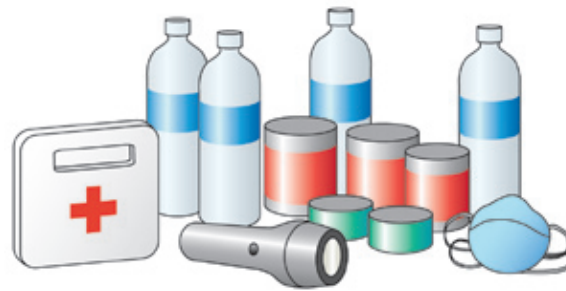
Get your seasonal influenza and pneumonia vaccination

Even though the influenza vaccine does not include protection against avian influenza, be sure to get an influenza shot anyway. If you have the influenza shot, it will protect you against the seasonal influenza and prevent you from developing it during the same time that pandemic influenza may be circulating in your community. Talk to your doctor about how to get the pneumonia vaccination – this could help prevent secondary infections that can occur from having the flu.

Prepare your records

According to estimates, 1 in 40 people will not survive a severe pandemic.⁷ You should get your estate in order and make sure your will and life insurance are up to date so that your family will be looked after. If you need to, buy more life insurance now since it takes time to get a policy. You may wish to consider buying a life insurance policy for your spouse and children. It would be prudent to select only the bluest of blue chip insurers, as the economic impact of a major pandemic will not be predictable.

Stockpiling for Home



Store 1-3 months of non-perishable food for every family member

In the event of a pandemic you should be prepared to live without normal access to grocery stores and pharmacies. Prepare by

- Selecting foods that do not require refrigeration, preparation (including water), or cooking. Foods like canned meats and fish, beans, soups, fruits, dry cereal or granola, baby food, salt and sugar, are good choices. Don't forget pet food.
- Having materials for oral rehydration solution (e.g., salt, instant baby rice cereal); for example, Pedialyte for kids, Gatorade for adults and teens, or any other generic electrolyte solution.
- Providing rehydration solution for adults and teens. **A**
- Having a supply of formulas for infants and other person's special nutritional needs.
- Storing a 1-month supply of fresh water for each family member - plan for one to two gallons per day use per person.
- Storing a month's supply of food for pets.
- Ensuring that you have necessary medical supplies (e.g., glucose, insulin, and blood-pressure monitoring equipment) if you have a chronic disease condition.
- Talking to your healthcare provider to ensure adequate access to your medications and obtain an extra month's worth of prescription medicines.

"If people are not able to avoid crowded places, [or] large gatherings or are caring for people who are ill, using a facemask or a respirator correctly and consistently could help protect people and reduce the spread of pandemic influenza."

-Dr. Julie Gerberding, CDC Director

Other items in your pandemic flu emergency kit

- Disinfectants and chlorine bleach
- Supply of surgical face masks and plastic gloves; these can help protect you, especially if you are taking care of family members or need to go out in public
- Supply of ibuprofen, acetaminophen, and cough medicine for each person in the house for fever and pain
- Cell phone and charger
- Water purification tablets

A See Appendix C for a complete stockpiling list and Appendix D for Items for treatment of severe influenza. See Appendix E for recipe for Oral Rehydration Solution.

Ways You and Your Neighbors Can Help



Neighborhood organization can help fill the gap left by an overwhelmed infrastructure

During the 1918-1919 pandemic, community volunteers such as teachers and other persons who were out of work owing to quarantine and closures were essential in facilitating quarantine implementation, documenting the sick, and alleviating overflowing healthcare facilities. Control of a modern pandemic will also benefit from a similar volunteer system.

During a pandemic, absenteeism at most businesses and establishments, including essential services, could involve up to 40% of their employees. This estimation will vary according to characteristics of the virus.

Highly desired volunteers include but are not limited to

- Retired healthcare personnel
- Skilled laborers
- People who have recovered from previous infection with the circulating pandemic influenza strain
- People with medical training that can aid in caring for ill individuals
- Mental health and spiritual counselors
- People with disaster response training

Although the threat of pandemic influenza may not seem imminent enough now to do anything, when it does become an issue it can move very quickly from one stage to the next, and it will be helpful to think these things over ahead of time. The sooner you prepare, the better you will be able to respond.

Here are some suggestions on the types of neighborhood volunteer roles that you might need. Meet with your neighbors and family, and talk about what would work best for you.

- Area Leader
- Volunteer Recruiter and Coordinator
- Supplies Manager
- Medical Operations Manager
- Communications Leader
- Coroner Function
- Public Educator
- Mental Health Monitor
- Special Skills

 See Appendix F for *Community Volunteer Roles and Responsibilities*

Citizen Corps₈

Citizen Corps, a vital component of USA Freedom Corps, was created to help coordinate volunteer activities that will make our communities safer, stronger, and better prepared to respond to any emergency situation. It provides opportunities for people to participate in a range of measures to make their families, their homes, and their communities safer from the threats of crime, terrorism, and disasters of all kinds.

Citizen Corps programs build on the successful efforts that are in place in many communities around the country to prevent crime and respond to emergencies. Programs that started through local innovation are the foundation for Citizen Corps and this national approach to citizen participation in community safety.

Citizen Corps is coordinated nationally by the Department of Homeland Security. In this capacity, DHS works closely with other federal entities, state and local governments, first responders and emergency managers, the volunteer community, and the White House Office of the USA Freedom Corps.



The **Community Emergency Response Team (CERT) Program** educates people about disaster preparedness and trains them in basic disaster response skills, such as fire safety, light search and rescue, and disaster medical operations. Using their training, CERT members can assist others in their neighborhood or workplace following an event and can take a more active role in preparing their community. The program is administered by the U.S. Department of Health and Human Services (HHS).



The **Fire Corps** promotes the use of citizen advocates to enhance the capacity of resource-constrained fire and rescue departments at all levels: volunteer, combination, and career. Citizen advo-

cates can assist local fire departments in a range of activities including fire safety outreach, youth programs, and administrative support. Fire Corps provides resources to assist fire and rescue departments in creating opportunities for citizen advocates and promotes citizen participation. Fire Corps is funded through DHS and is managed and implemented through a partnership between the National Volunteer Fire Council, the International Association of Fire Fighters, and the International Association of Fire Chiefs.



USAonWatch (UOW)-Neighborhood Watch works to provide information, training and resources to citizens and law enforcement agencies throughout the country. In the aftermath of September 11, 2001, Neighborhood Watch programs have expanded beyond their traditional crime prevention role to help neighborhoods focus on disaster preparedness, emergency response and terrorism awareness. USAonWatch-Neighborhood Watch is administered by the National Sheriffs' Association in partnership with the Bureau of Justice Assistance, U.S. Department of Justice.



The **Medical Reserve Corps (MRC) Program** strengthens communities by helping medical, public health, and other volunteers offer their expertise throughout the year as well as during local emergencies and other times of community need. MRC volunteers work in coordination with existing local emergency response programs and also supplement existing community public health initiatives, such as outreach and prevention, immunization programs, blood drives, case management, care planning, and other efforts. The MRC program is administered by the HHS.



Volunteers in Police Service (VIPS) works to enhance the capacity of state and local law enforcement to utilize volunteers. VIPS serves as a gateway to resources and information for and about law enforcement volunteer programs. Funded by the Department of Justice (DOJ), VIPS is managed and implemented by the International Association of Chiefs of Police.

Checklist for Pre-Pandemic Preparation



You are now ready to begin preparations to help protect and prepare yourself, your family, and loved ones from a pandemic outbreak of influenza. You also have the knowledge to educate your neighbors on how to start their own pandemic emergency kits.

Because in many cases governments won't be able to help on a local level if a pandemic should occur, it is up to each individual, family, and neighborhood to care for itself. By being proactive, you are taking a vital step in lessening the chaos that may occur during a pandemic. The more people are prepared, the better off society will be to survive a pandemic.

You should now understand

- How the flu can be transmitted from person to person
- How to recognize symptoms of the flu
- How to properly wash your hands
- How to prevent spread of infection
- Ways in which you may involve your community
- How to plan with your neighbors and coordinate response
- How to prepare your home and stockpile for an extended stay
- Some ways you should immediately begin to involve your family
- Ways to investigate pandemic preparedness around you
- About the many different volunteer organizations around you

Chapter 3



Response

“Being prepared does not apply only to those of us who respond at the time of need, — all citizens must take this seriously and begin to plan for any potential disaster that may occur in our own community.”

-Rebecca Patton, President of the American Nurses Association

In this chapter you will learn

- What life could look like during a severe pandemic
- Medical management of influenza
- Home treatment during a pandemic
- Complementary medicines
- The importance of hydration
- What you and your neighbors can do to help

After reading this chapter, you will be able to

- Administer basic care for an adult or child with influenza at home
- Know how to purify water

A Glimpse of Life During a Pandemic

Routine services may be disrupted

- Hospitals, schools, government offices, and the post office
- Telephone service, the Internet, commercial radio and TV broadcasts could also be interrupted if the electric power grid falters or fails
- Stores and businesses may be closed and/or will have limited supplies
- Local ATMs and banks may be shut down, and cash will be in short supply

Public transportation services and communication may be disrupted

- Gasoline supplies may be limited or unavailable
- Travel could be restricted by fear, quarantine or curfew
- Public gatherings may be canceled
- Communications about pandemic status may be limited due to changing circumstances and limited communication services

Mental health impact

- People in your community may be dying from the pandemic influenza virus
- Citizen anxiety, confusion, and fear are likely

You, your family, and your local community will need to be able to function independently during this period of time. One area of self sustainability will be in managing influenza issues at home for your family and local community members who are unable to care for themselves (for example, medically vulnerable children, elderly, pregnant women, and the immuno-compromised).

Medical Management of Influenza

Medical services will be strained as they try to manage the surge of patients during a pandemic. In the beginning of a pandemic, individuals will be caring for their families and loved ones in an isolated fashion, usually at home. Laypeople will become caregivers learning how to obtain vital signs such as pulse, blood pressure, temperature, and respiratory rates of these sick family members and neighbors. There are also many people, such as elderly citizens living alone, who have no one to care for them; community members will need to be mindful of helping these individuals as well.

Helpful hints for managing influenza at home


Diagnoses, treating physician, medications and treatment schedules

- Have a medical history available for every person in your household
- Designate one person as caregiver


Keep unexposed visitors out of the house if there are persons inside the house who may have or do have influenza.


Monitor exposed persons for signs of illness.

If exposed persons become ill, arrange for immediate medical evaluation, if possible.

- Those with symptoms should be isolated inside the house.
- If **asymptomatic** , but exposed to the sick, they should stay inside.

Keep a record of every person being cared for.

- It is useful to write down health information about the people that are being cared for at home.
- Keep the record arranged chronologically and try to be as accurate and consistent as possible.
- Note the person's general appearance.
- Take a patient's **vital signs**  three or four times each day or when a significant change in condition is observed. Include temperature, pulse rate (in beats per minute), breathing rate (in breaths per minute), and if possible, blood pressure as well. Other important information is estimations of fluid intake and output.

 See appendix G for a sample of a home patient medical record

Blood pressure monitoring

Learn to use an automated blood pressure monitor to measure blood pressure. These devices come with good instructions that clearly explain how to use them. “Practice makes perfect” applies to learning and perfecting these skills. If you need help learning how to use these devices, ask your doctor or his or her nurse for help. They will be happy to help you develop these simple skills. All you need to do is ask.⁷

Treatment at Home



“While researchers are working very hard to develop pandemic influenza vaccines and increase the speed with which they can be made, non-pharmaceutical interventions may buy valuable time at the beginning of a pandemic while a targeted vaccine is being produced.”

-Anthony S. Fauci, M.D., director of National Institute of Health's National Institute of Allergy and Infectious Diseases (NIAID)

Antiviral prescriptions

There are two main antiviral medications (known as neuraminidase inhibitors) shown to be effective in reducing the severity and duration of illness caused by seasonal influenza and may be helpful against pandemic influenza. They can be prescribed only by a physician. These are Oseltamivir (also known as Tamiflu) and Zanamivir (commonly called Relenza).

For antiviral medication dosages visit the CDC's website: www.cdc.gov/flu

Limitations in the use of antivirals

- Antiviral medications are going to be in high demand during the pandemic. Thus, most individuals will not have access to these medications once a pandemic begins.
- Antivirals are most effective if taken within 48 hours after the onset of the first symptoms.
- Antiviral medications are not always effective, so don't rely on them completely.

Basic Health Assessment and Treatment₇

By recognizing the symptoms a patient has or the signs of the disease in the body, you can use the chart below to guide your treatment. Here's how.

Symptom or Sign	Likely Assessment	Treatment
• Low urine output	• Dehydration	• Push fluids
• High pulse rate (>80 but especially > 90)	• Dehydration or fever	• Push fluids
• Shortness of breath	• Pneumonia	• Push fluids
• Shaking chills and shivers	• Viremia (virus in the blood) or pneumonia	• Keep warm
• Cyanosis (skin turns blue)	• Respiratory failure, death likely	• Keep as comfortable as possible. Give hydrocodone with promethazine for comfort, give diazepam for anxiety
• Bleeding from mouth, coughing up blood, passing red blood per rectum, severe bruising	• A severe blood clotting abnormality has occurred due to the virus (DIC). Death is likely	• Keep as comfortable as possible. Give hydrocodone with promethazine for comfort, give diazepam for anxiety
• Vomiting	• Virus affecting GI tract	• Use promethazine for vomiting, push fluids
• Diarrhea	• Virus affecting GI tract	• Push fluids, clear liquid diet
• Severe stomach cramps	• Virus affecting GI tract	• Use hydrocodone and promethazine for comfort
• Headache		• Ibuprofen and/or acetaminophen or hydrocodone if very severe
• Fever		• Ibuprofen, acetaminophen, push fluids, keep warm or cool, consider tepid water baths if > 102 F. OK if <101 as this may help kill virus.
• Sore throat		• Gargle with hot salt water, drink hot tea or hot water, ibuprofen and or acetaminophen
• Cough		• Push fluids, drink hot tea for effect on breathing tubes, use hydrocodone ½ tablet with or without ½ promethazine to suppress cough if needed

Over-the-counter (OTC) Medications,

- To prevent adverse reactions or avoid extra medication that will have little or no effect, use an OTC remedy that treats only one symptom and/or has only one active ingredient.
- If you are taking more than one medication at a time, check the labels to avoid taking the same ingredient twice.
- Try regular strength products before using extra strength.
- Follow instructions on the label. Note possible side effects or drug/health conditions when the medication should not be used.
- Check the expiration date on medications in your home. Take outdated medications to a pharmacy for disposal.
- Keep all medications out of reach of children.

How to treat specific influenza symptoms in adults

Muscle pain and fever:

- Use acetaminophen (the best choice for older adults); for example, Tylenol®. Note: if you take acetaminophen for a long time or in high doses, it can affect the liver and kidneys.
- Ibuprofen; for example Advil® or Motrin®, is an alternative. Note: Ibuprofen can irritate the stomach.

Cough:

Try a medication with Dextromethorphan(DM) for a dry cough that prevents you from sleeping or causes chest discomfort. Delsym® and Benylin-Dry Cough® contain DM (without other ingredients).

Stuffy nose:

Use a decongestant. Nose drops or sprays act quickly and have fewer side effects than medications you take by mouth. But they should be used only for two to three days to avoid rebound congestion. If stuffy nose continues, consider an oral medication such as pseudoephedrine. Decongestants may cause dry mouth, sleep problems, rapid heartbeat, or other side effects.

People who have long-term health problems or who are on other medications should not take decongestants without talking to a healthcare provider.

Sore throat:

Try lozenges or throat sprays. Dyclonine (for example Sucrets®) works best to numb the throat. Products containing honey, herbs, or pectin soothe the throat.

How to treat specific influenza symptoms in children

Treat influenza symptoms in children with OTC medications only if necessary.

Muscle pain and fever:

Acetaminophen (for example Tylenol®) is best. You may try Ibuprofen (for example, Motrin®) instead, but do not use it for babies less than 4-months old. Take the child's temperature before giving medication for fever. Do not wake a child to give the medication. Children under eighteen months should NOT take acetylsalicylic acid (ASA), e.g., Aspirin® or any products containing ASA. Combined with influenza, ASA can cause Reye's Syndrome, a very serious condition affecting the nervous system and liver.

Cough:

Use a cough suppressant (DM) for a dry cough in children over 2-years of age, but only if the cough is disturbing the child's sleep. Do not use DM for a moist cough or for children with asthma.

Stuffy nose:

Saline nose drops, such as Salinex®, may help a stuffy nose and cough. You may use decongestant sprays for children older than 6 months, and oral decongestants for older children, if needed.

Sore throat:

Throat lozenges or a warm salt water gargle may help children older than 6 years of age.

Other measures to reduce symptoms

- Steam bath using a pot of hot water and a few drops of eucalyptus oil to help clear congestion
- Use of a humidifier
- Warm salt water as a gargle for soothing sore throat.

The Importance of Hydration



People with influenza flu are at high risk of becoming dehydrated, so maintaining adequate intake of liquids is a critically important function for care givers.

Symptoms and signs of dehydration

- Weakness
- Headache
- Fainting
- Dry mouth
- Dry skin
- Thirst
- Decreased alertness and change in consciousness
- Decreased urine output
- Darkly colored urine
- Rapidly increased heart rate upon rising to a sitting or standing position

Preventing dehydration

It is possible that potable (safe drinking) water supplies may be in short supply or not available in a disaster, so you may need to purify the water. Here's how:

Purifying water

You can purify water for drinking, cooking, and medical use with these methods:

- Heat it to a rolling boil for 1 minute
- Use water purification tablets
- Add 8 drops of unscented liquid bleach per gallon of water (16 drops if the water is cloudy). Let the bleach/water solution stand for 30 minutes. Note that if the solution does not smell or taste of bleach, add another 6 drops of bleach and let the solution stand for 15 minutes before using.

Diet Recommendations₇

The clear liquid diet:

A clear liquid diet is used to treat certain intestinal diseases, especially infectious diarrhea. Patients suffering from diarrheal illnesses often experience abdominal cramping and frequent, loose stools if they eat solid foods. In addition, a great deal of water and minerals (sodium, chloride, and potassium) are lost in the watery portion of the diarrheal stool; if you are not careful this can lead to dehydration. Patients with diarrhea have to drink considerably more fluid than usual to prevent the dehydration. This is especially important if the patient also has a fever, which in itself leads to increased loss of body water through the skin as perspiration.

Treating diarrhea

In most cases, patients with diarrhea (a common symptom of influenza) can tolerate a clear liquid diet without cramping or more diarrhea. This is because the small intestine can absorb water, minerals, and sugars fairly well even when infected. The diet starts off with clear liquids only. As symptoms subside, simple-to-digest, low-residue foods are slowly added one step at a time. Don't advance to the next step until the patient is completely symptom-free in the present step. If the cramps and diarrhea return as the patient progresses through each step, drop back to the previous step they tolerated.

This same Clear Liquid Diet approach is the one to use for patients who have been ill with the flu and have been too ill to eat. They will have been on Step 1 already so when they become hungry, begin them on Step 2 and advance them through the steps as above.

Step 1: Oral Rehydration Solution (ORS), water, fruit juice, Jell-O, Gatorade or PowerAid, ginger ale, Sprite, tea.

Step 2: Add white toast (no butter or margarine), white rice, cream of wheat, soda crackers, and potatoes without the skin.

Step 3: To Steps 1 and 2 add canned fruit and chicken noodle soup.

Step 4: To Steps 1 through 3 add poached eggs and baked chicken breast without skin, canned fish or meat.

Step 5: To Steps 1 through 4 add milk and other dairy products, margarine or butter, raw fruits and vegetables and high-fiber whole grain products.

When to Seek Medical Care

When routine medical systems are unavailable, you may be required to care for family, friends, and neighbors but only do so up to a point. It is important that you seek professional medical attention if the patient is sick enough to warrant higher level of care.

Hospitals, doctor's offices, and clinics may be overwhelmed with the number of people requesting medical care. Not only will those with influenza be seeking care, but there will still be car accidents, surgery patients, and those needing emergency medical care that do not have influenza.

Patients with cancer, dialysis, HIV/AIDS, and other chronic debilitating medical conditions will likely experience disruption in access to vital medical services, so it's important to know when to seek additional help. If a patient is experiencing the dangerous symptoms outlined below, they should be seen by a health care professional.

Through appropriate use of basic information at home, we can all help to reduce the demand on a potentially overwhelmed healthcare delivery system and thereby assure that our family and neighbors in most urgent need of advanced medical care have potential life-saving access to proper care and treatment.

Seek medical care if patient is experiencing any of the following

Adults

- Those who have a chronic condition or are on immuno-suppressive therapy should be monitored especially closely
- High fever for 3 or more days without improvement
- Sudden high fever with recurrence of symptoms
- Extreme drowsiness and difficulty waking
- Disorientation or confusion
- Seizures,
- Severe earache
- Shortness of breath when at rest
- Difficulty or pain in breathing

- Coughing up blood or foul-smelling sputum
- Chest pain
- Persistent vomiting or severe diarrhea not managed by standard measures
- A severe change in the ability to function, especially if elderly
- Symptoms of severe dehydration
- Blue discoloration skin, lips or nail beds
- Bleeding from nose that cannot be stopped easily through pressure
- Bloody diarrhea

Children

- Child is less than 3-months old and is ill with influenza
- Child has a chronic illness or is on immuno-suppressive treatments and is ill with influenza
- Child takes aspirin (acetylsalicylic acid) regularly and is ill with influenza
- Change in breathing pattern with increasingly labored breathing
- Excessive irritability or listlessness
- Symptoms of severe dehydration; e.g., if there is a significant reduction in urine output (less often than every 3 hours if younger than 6 months, less often than every 6 hours if older than 6 months)
- Severe difficulty breathing
- Blue lips or suddenly very pale
- Has a full or sunken fontanel (soft area on the top of a young child's head)
- Is limp or unable to move
- Appears confused
- Has a seizure
- Appears to be dehydrated

Checklist for Pandemic Response



- Understand how your life may change during a pandemic.
- Be prepared to recognize and treat symptoms of the flu.
- Understand the importance of hydration. Recognize symptoms of dehydration and treat it immediately.
- Know when to seek medical care for adults and children.

Chapter 4



Communication and Volunteering

“A Flu Pandemic would overwhelm the current system and our existing health care resources – either we develop resilient communities or tens of thousands will die who might be saved.”

- *Dr. Peter Sandman and Dr. Jody Lanard*

In this chapter you will learn

- Infrastructure problems during a pandemic
- Alternative methods of communication
- Volunteering during a pandemic

After reading this chapter, you will be able to

- Prepare for the collapse of traditional communication methods
- Understand the critical importance of trained volunteers

Pre-pandemic Communication

When outbreaks first occur, local infrastructure will likely be in working order. Take advantage of this luxury to stay updated on current news and public warnings set out by local and national authorities.

During a pandemic there will likely be significant disruption of public and privately owned critical infrastructure including transportation, commerce, utilities, public safety, and communications. This disruption will be partly caused by mass absenteeism, illness, and death of the people in charge of maintaining these areas. For example, in Georgia, estimated deaths are 57,000 and an additional 2,688,000 are expected to fall ill. In California, the estimate is 235,000 deaths and 10,713,000 sick.¹⁰

While communications are still in working order, frequently check for updates on these websites.

- Centers for Disease Control and Prevention: www.cdc.gov
- Website about pandemic influenza managed by the U.S. Department of Health and Human Services: www.pandemicflu.gov
- World Health Organization: www.who.int
- Your state or county's department of public health website
- For general information about influenza: see www.fluwikie.com

Information technology

The Internet will be a main source of information during an emergency. The CDC estimated that 97% of all internet users and 64% of all non-users expect to be able to find important information online. After September 11th, using the Internet as a main news source grew 8%. The 2001 anthrax attacks also demonstrated this, and additionally led to the prevalence of false information and “panic-baiting.”¹¹ Blogs are another growing source of information that often fill in what is missing in news reports. These may appeal to individuals and communities coping with the effects of a pandemic.

All the free information on the Internet comes with it the need for monitoring that information for

accuracy and truth. Technorati (<http://technorati.com>) tracks and monitors ~50 million blogs. But during a pandemic, this information will be harder to monitor so find a news source that you trust and stick with it.

Owing to the fast spread of information, world media outlets such as radio, newspapers, T.V., and the Internet will be rapidly dispersing information as soon as evidence of a regional outbreak of influenza is detected. However, as the pandemic grows, local communications infrastructure, such as power and telephone lines may be compromised significantly thus limiting information dissemination.

Problems

- If there is a power failure in your area, this incoming information will be harder to receive.
- Local power failures will lead to loss of T.V., cell phone chargers, and anything else in your home that requires a power source.
- Landlines can sometimes operate during a black-out, but are unlikely to function reliably.
- Cell phone towers have back-up capability but it is not a large source and they, too, may soon become inoperable.

Solutions

- Add a battery operated or hand-crank radio to your emergency kit. (be sure to stock batteries and to replace them every 6 months!) Make sure the radio picks up AM, FM, and short wave stations.
- Obtain your Ham radio license and see if anyone in your neighborhood owns a Ham radio. Ham Radio is part of the Amateur Radio Service – Check it out at www.arrl.org.
- Create a network of neighbors, family, co-workers, and friends to stay in contact with throughout the duration of a pandemic.

Alternative Methods of Communication

Communication skills during stressful times

Most experts predict that the vast majority of people will act rationally in the case of a pandemic. Creative coping will be the norm. Panic will be the exception. Fear can be mediated by information, which highlights the crucial role of effective communication.

In a serious crisis, it's important to remember that people take in, process, and react to information differently. ¹²

Since information is bound to change often, people will have emotions ranging from fear to disbelief and even panic. Communicating about scary risks and disasters that do not have an immediate, visible threat (such as pandemic influenza) is oftentimes challenging. These are some simple but important techniques that you can use to more effectively communicate your message through all pandemic phases.

- Be honest. Speak the truth – don't manage the message. Educate people on how to best prepare, stockpile, recognize, and treat influenza, and where to go for information.
- Be clear and concise when communicating information. Avoid using jargon and short hand when talking to people who know little about influenza. Overwhelming people from the start may lower the impact of your message.
- Don't make promises that can't be kept. It's best not to tell people everything will be all right, because, sadly, everything won't be all right. If you're caring for someone, let them know you're doing everything you can for them.

Stressful times

*Behaviors will impact infection rates.*¹²

Denial, high-risk behavior such as coughing without covering or not washing your hands, believing "someone else" will take care of "it", or just ignoring the problem will all lead to higher infection rates and more rapid transmission of the illness. The fact is that no one is immune, and we all need to take responsibility for our actions.

*Mental toughness is more important than physical toughness.*¹²

Self-sufficiency, a desire to survive, and good coping strategies are powerful tools you can use.

Your own health must come before tending to the needs of others.

If you don't take care of your own health, you will be of little use to those that need you. You may experience, see, and hear particularly challenging, difficult, and unpleasant things. Vicarious trauma, that is, experiencing the trauma of others as your own because of your close proximity and contact with it, is an occupational hazard for people living through a pandemic or any other disaster. One way to preserve your mental health is to avoid over-identifying with victims. Do not take on the victim's feelings as your own. Taking ownership of others' problems will compound your stress and affect the overall effectiveness of your role. Be conscious of these dangers and remain alert to signs of trauma in yourself and others.

Respect cultural differences, as they will arise when it comes to death and bereavement and also in caring for the ill.

Recognizing symptoms of distress¹³

Psychological

- Anxiety, worry, guilt, or nervousness
- Increased anger and frustration
- Moodiness and/or depression
- Change in appetite
- Racing thoughts
- Nightmares
- Problems concentrating/forgetfulness
- Disorganization or confusion
- A sense of being overwhelmed
- Suicidal thoughts
- Fear of getting close to people
- Loneliness

Physiological

- Tension headaches
- Frowning
- Gritting or grinding of teeth
- Jaw pain
- Stuttering or stammering
- Trembling of lips or hands
- Muscle tenseness, bracing, and aches
- Neck aches
- Back pain
- Aggressive body language

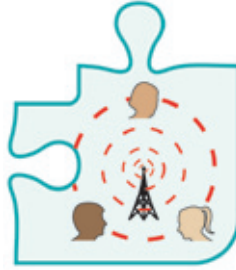
Volunteering during a pandemic

During a disaster, many local agencies respond and render aid to members of the community. The Fire Department will take a lead role in the local response. You may already be a volunteer working with one of these agencies; for example, the fire or police Corps, CERT, or the Red Cross. You may also know how to operate a Ham radio or have skills in managing a shelter.

You will need to decide for yourself whether you wish to offer your services to this or another agency, or whether you wish to remain at home and focus on your family and/or your neighborhood. Any one of these actions is the right course, as long as it's right for you. There's no need to feel pressured to volunteer outside the home or neighborhood if you do not wish to do so.

When disasters occur, established volunteer agencies are often not prepared or able to handle the influx of volunteers that wish to help. While this may not be as much of an issue with a pandemic, it is still good to remember.

Checklist for Communications and Volunteerism



- Obtain a battery operated or hand-crank radio that has AM, FM, broadcast television, and short-wave frequency capability.
- Practice talking with family members about what it might be like to be in a pandemic where your normal day to day communications, such as the phone and television could be gone.
- Consider getting a basic amateur radio (Ham) license and buy a basic handheld VHF transceiver. You must have a license from the FCC in order to use this type of transceiver.
- Recognize psychological and physiological symptoms of depression and anxiety.
- Learn about ways to volunteer during a disaster and evaluate your own interest in, and capacity for, doing so.

Chapter 5



Recovery and Waves

“Coming together is a beginning. Keeping together is progress.
Working together is success.”

– *Henry Ford*

In this chapter you will learn

- That pandemics can come in multiple waves
- About the role of the coroner during a pandemic

After reading this chapter, you will be able to

- Use the checklists as guides in your preparations

The Recovery Stage

The recovery stage will encompass some of the more unpleasant aspects of disaster, such as the handling of dead bodies, taking stock of who remains, restructuring any volunteer systems that were built, and recognizing that it may not truly be over.

Waves of a pandemic

In a pandemic, there can be multiple waves. Once people think the illness rates are subsiding, they are more comfortable attending social functions and do not pay as much attention to social distancing and proper isolation and infection control techniques, like hand-washing and cough etiquette. This can lead to ongoing or new waves of influenza spread throughout the community. For this reason, it is important not to become too complacent once the threat appears to be gone. Continue to monitor disease activity in your neighborhood through local health department reports (try Googling “who is sick”). Rely on the infection control techniques described in chapter 2, while continuing to monitor information on the pandemic locally, regionally, and nationally.

Remember

- If you have been sick with the circulating pandemic strain of influenza and recovered, you are now a survivor-- immune to the circulating strain.
- As a survivor you can treat the sick without worry of becoming ill again, as long as the virus has not significantly evolved into a new strain. It is important to note, however, if you did not become sick in a previous wave you may still be susceptible during subsequent waves.
- State and local jurisdictional public health departments should be able to determine the nature of the strains circulating locally and regionally through their laboratory surveillance activities. Regardless, it is always best to use basic infection control precautions.

Take an inventory

Now is a time when businesses may be beginning to open, and suppliers may be delivering goods and services again. Take stock of your current situation and restock anything that may be needed. Now that you’ve survived the first wave, you’ll know about items you wished you had put in your original kits, such as books, more toys and activities for the kids, and maybe some luxury items like chocolate or waterless shampoo.

While you may add comfort items to your kit, always remember the basics – food, water, clothing, and medical supplies.

Volunteer systems

• Recruit willing survivors to fill leadership roles.

Survivors have always played important roles in emergency response, and a pandemic is no exception. Because they have developed a natural immunity to the virus, a survivor’s role in caring for the ill cannot be overstated.

• Modify volunteer command structure as needed.

Throughout the pandemic, roles for volunteers will change as the needs of the community change.

• Continue assisting community partners such as the local health department, community groups, or fire department.

You can play an important role as a volunteer within existing structures as well as within your neighborhood watch groups.

Dealing with Death During a Pandemic

One of the more unfortunate and inevitable aspects of a pandemic is the increase in death rates in the community. Some experts predict that the bodies of those who have died from pandemic influenza will still be contagious for up to 3 days or more, so you should take the same precautions in handling the body that you would do with someone who is sick.

What to do when someone dies at home

- Call your local police department or other designated contact.
- If no physician was in attendance, the police department may call the coroner to come and make a ruling on the cause of death.
- Be sure to obtain a copy of the death certificate. A death certificate is required to claim benefits, for insurance, and other purposes.
- While wearing protective covering (gloves, mask, etc.), isolate the body, wrap it in plastic and secure with strong tape and place it in the coldest environment possible
- **Record and keep this information with the body.**
 - Date/time found
 - Exact location found
 - Name/other known information
 - How identified, when and by whom
 - Your name, contact information

What not to do

- Under no circumstance attempt to cremate a body.
- Under extreme circumstances where timely body pick-up is not available, the body can be buried in a well-marked grave within a temporary community cemetery.

Some things to consider

- In the event of a pandemic, professionals dealing with the deceased will most likely be overwhelmed.
- It may take days, if not longer, for the body to be picked up from your home.

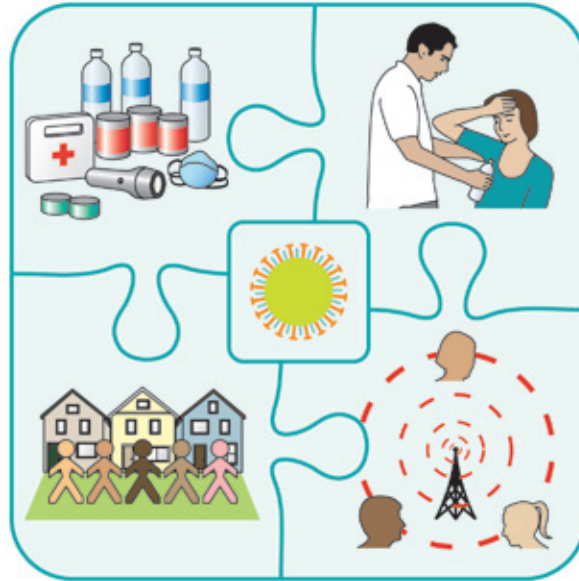
- With infrastructure damaged, the ability and capacity to store, transport, and process bodies may be backed up by the hundreds or thousands, depending on the area and stage of the pandemic.
- While it may take longer for bodies to be picked up, authorities will do everything they can to remove the body from the home in a timely manner.

The role of the coroner

Previously mentioned were some expected estimates for the number of deaths that could occur in a pandemic. When infrastructure comes back on line, the coroner may make house calls to collect the dead, as was seen in the 1918 outbreak. During a pandemic, the coroner's office is required to perform normal operations, in addition to following the instructions of the county health officer and coordinating planning efforts of funeral homes and cemeteries. However, due to high demand, these operations may be delayed.

Even though it may seem obvious that your loved one has passed away from influenza, U.S. Government Code 27491 mandates that the coroner or the coroner's appointed deputy examines the body; makes identification; determines the circumstances, manner, and means of death; performs evidence collection; processes personal effects; and, as circumstances warrant, isolates or decontaminates, transports and stores human remains. Code [27491] states that for purposes of inquiry, the body of one who is known to be dead from any of the causes, or under any of the circumstances that cause sudden and unexpected deaths, shall not be disturbed or moved from the position or place of death without permission of the coroner or the coroner's appointed deputy. In a pandemic this will not always be possible. However, you should be aware of the rule.

A Conclusion



Now that you know about the consequences of pandemic influenza, it is clear that individuals and families can help to educate others to limit the impact pandemic influenza on our communities.

No one can predict when the next pandemic influenza will occur, its severity or strain. When one does, and all authorities agree that one will occur in time, you are now prepared to respond to the threat. It is important to make connections in your community and spread awareness about pandemic influenza. In the end, it will be each individual's responsibility to plan for and respond to a pandemic outbreak. The responsibility to respond to this type of disaster cannot be placed on the shoulders of our emergency personnel. You will play an integral role to keep yourself as safe and healthy as possible, and avoid becoming a victim yourself.

As an informed and appropriately prepared citizen, you will play a pivotal role in protecting the safety and well being of your community.

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Appendix

- A** World Health Organization
- B** World Health Organization Advice for Travelers
- C** Items to Stockpile for an Influenza Pandemic
- D** Items for Treatment of Severe Influenza
- E** Home-made Oral Rehydration Solution
- F** Possible Roles for Community Volunteers
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Appendix A

World Health Organization

The World Health Organization is the United Nations specialized agency for health. It was established on 7 April 1948. WHO's objective, as set out in its Constitution, is the attainment by all peoples of the highest possible level of health. Health is defined in WHO's Constitution as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

WHO is governed by 192 Member States through the World Health Assembly. The Health Assembly is composed of representatives from WHO's Member States. The main tasks of the World Health Assembly are to approve the WHO programs and the budget for the following biennium and to decide major policy questions.

WHO is coordinating the global response to human cases of H5N1 avian influenza and monitoring the corresponding threat of an influenza pandemic.

Phases

The WHO has defined six phases that outline the spread of the virus throughout the population. These Phases are the ones most commonly used in the media and are most appropriate for considering the pandemic from an international perspective.

Inter-Pandemic Period (between pandemics)

Phase 1: No new influenza virus subtypes have been detected in humans.

An influenza virus subtype has caused human infection and may be present in animals. If present in animals, risk of human infection is low.

Phase 2: No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.

Pandemic Alert Period

Phase 3: Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.

Phase 4: Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.

Phase 5: Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).

Pandemic Period

Phase 6: Pandemic phase: increased and sustained transmission in the general population.

For more information, please visit: www.who.int

Appendix B

World Health Organization Advice for Travelers as of November 2005

WHO recommendations relating to travelers coming from and going to countries experiencing outbreaks of highly pathogenic H5N1 avian influenza

These recommendations are in line with current phase 3 in the WHO 6-phase scale of pandemic alert. These recommendations may change according to the change in the epidemiological situation and related risk assessments.

Restrictions on travel to areas affected by H5N1 avian influenza is not recommended

WHO does not recommend travel restrictions to areas experiencing outbreaks of highly pathogenic H5N1 avian influenza in birds, including countries that have reported associated cases of human infection.

Screening of travelers coming from H5N1 affected areas is not recommended

WHO does not, at present, recommend the routine screening of travelers coming from affected areas. Local authorities may, however, usefully provide information to travelers on risks, risk avoidance, symptoms, and when and where to report should these symptoms develop.

Avoid contact with high-risk environments in affected countries

Travelers to areas affected by avian influenza in birds are not considered to be at elevated risk of infection unless direct and un-protected exposure to infected birds (including feathers, feces, and under-cooked meat and egg products) occurs.

WHO continues to recommend that travelers to affected areas should avoid contact with live animal markets and poultry farms, and any free-ranging or caged poultry. Large amounts of the virus are known to be excreted in the droppings from infected birds. Populations in affected countries are advised to avoid contact with dead migratory birds or wild birds showing signs of disease.

Direct contact with infected poultry, or surfaces and objects contaminated by their droppings, is considered the main route of human infection. Exposure risk is considered highest during slaughter, defeathering, butchering, and preparation of poultry for cooking. There is no evidence that properly cooked poultry or poultry products can be a source of infection.

Travelers should contact their local health providers or national health authorities for supplementary information.

Appendix C

Items to Stockpile for an Influenza Pandemic

Have at least 1-3 months worth of the following on hand for an extended stay at home

Foods and Nonperishable Items

- Ready-to-eat canned meats, fish, fruits, vegetables, beans, and soups
- Protein or fruit bars
- Dry cereal or granola
- Peanut butter or nuts
- Dried fruit
- Crackers
- Canned juices
- Bottled water (1 gallon per person, per day)
- Canned or jarred baby food and formula
- Pet food and supplies (flea treatment etc.)
- Salt
- Sugar
- Cooking oil
- Multi-vitamins
- Dried beans
- Rice
- Honey (not to be fed to infants under 1-year old)
- Instant baby rice cereal (for cereal-based oral rehydration solution)
- Water – 1 gallon per person, per day

*When possible, try to purchase foods that are low in sodium

* For water: 2 quarts for drinking, 2 quarts for food preparation/sanitation - use clean plastic containers. Avoid using containers that will decompose or break, such as milk cartons or glass bottles.

Medical, Health, and Emergency Supplies

- Alcohol-based hand rub, cleansing agent/soap
- Chlorine or iodine for disinfecting water
- Cell phone and charger
- Flashlight with extra batteries

- Portable radio and batteries, or hand-crank radio
- Manual can opener
- Garbage bags
- Thermometer
- Fluids with electrolytes
- Multi-vitamins
- Medicines for fever, such as acetaminophen or ibuprofen
- Anti-diarrhea medication

Sanitary Items

- Two 5 gallon buckets – one for feces and one for urination
- Large garbage bags
- Lye – sprinkle this on feces after each use – it will help with odor and decomposition
- Tissues, toilet paper, disposable diapers, tampons, sanitary pads, and paper towels

Additional Materials

- Duct and masking tape
- Pens, pencils, and paper
- Spray paint
- Surgical/dust masks
- Shovel
- Temperature sensors
- Flashlights
- Plenty of extra batteries
- Money in small denominations
- Disposable plates, napkins, cups and plastic ware
- Bicycles – fuel may be in short supply
- Novels
- Journal
- Games and books for children
- Deck of cards
- Baby toys
- Any items that you feel will provide you with comfort during a long stay at home
- To build a custom kit, visit the codeReady website at www.codeready.org/kit.cfm

Appendix D

Items for Treatment of Severe Influenza₁₃

OTC (over-the-counter) products to have on hand for home treatment of one person with severe influenza.

If you have more than one person in your household, multiple the amounts suggested by the number of people. For example – for a household with 4 people, have 4 lb of table salt available.

- Table salt: 1 lb
- Table sugar: 10 lbs
- Baking soda: 6 oz
- Household bleach 1 gallon
- Tums Ex: 500 tablets
- Acetaminophen 500mg #100 tablets
- Ibuprofen 200mg #100 tablets
- Caffeinated tea, dry loose 1 lb
- Electronic thermometer #2₁₁
- Automatic blood pressure monitor₁₂
- Notebook for recording vital signs and fluid intake and output
- Kitchen measuring cup with 500 cc (two cup) capacity
- Diphenhydramine (Benadryl) 25mg capsules #60: 1 tablet every 4 hours as needed for nasal congestion, allergy, or itching.

Appendix E

Home-made Oral Rehydration Solution

Allow sick individuals sips of liquids every 5 minutes, day and night, until he or she begins to urinate normally. A large person needs 3 or more liters a day. A small child usually needs at least 1 liter a day, or 1 glass for each watery stool. Keep giving fluids often in small sips, even if the person vomits. Do not stop administering fluids until the person has been able to keep down at least a quart of fluids. This requires caregivers to “push fluids” and be persistent with maintaining adequate hydration.

Stir the following ingredients until the salt and sugar dissolve. You can also add 1/2 cup orange juice or some mashed banana to improve the taste and provide some potassium.

- one level teaspoon of salt
- eight level teaspoons of sugar
- one liter (just over four cups) of clean drinking or boiled water and then cooled

Hydration Maintenance Guidelines Based on Age

Infants (under 1 year of age)

- Breast milk
- Infant formula
- Store-bought oral rehydration solution (Pedialyte for example)
- Diluted fruit juice (50% water, 50% juice)
- Home-made cereal-based oral rehydration solution (see below for recipe)

Toddlers (1-3 years of age)

- Milk
- Store-bought oral rehydration solution (Pedialyte for example)
- Soup broth
- Jell-O water (1 package per quart of water, or twice as much water as usual)
- Popsicles
- Gatorade
- Kool-Aid
- Juices
- Home-made cereal-based oral rehydration solution

Children over 3, teens, and adults

- Water
- Soup broth
- Jell-O water (1 package per quart of water, or twice as much water as usual)
- Popsicles
- Gatorade
- Kool-Aid
- Juices

Home-made Cereal-based Oral Rehydration Solution Recipe

A homemade cereal-based solution can be prepared by mixing one-half cup of dry, precooked baby rice cereal with two cups of water and one-quarter teaspoon of salt. This should produce an oral rehydration solution containing about 60 g of rice per L and 50 mEq of sodium per L. The salt must be measured carefully, using a level quarter-teaspoon. The resulting mixture should be thick, but pourable and drinkable, and it should not taste salty.

Appendix F

Possible Roles for Community Volunteers

Area Leader Duties:

- Maintain communication with local emergency operations center
- Manage neighborhood surveillance and documentation
- Maintain command structure within volunteer group
- Establish new areas that need specific leadership, such as mental health
- Maintain contact with the media

Volunteer Coordinator Duties:

- Recruit volunteers and maintain updated contact list
- Add new volunteers to database
- Work with area leader to determine current needs of the community

Supplies Manager Duties:

- Coordinate supply pick-up in case of donations
- Help obtain food and medical supplies
- Coordinate storage of area refrigerators, generators, propane tanks
- Coordinate usage of essential pandemic supplies: temperature sensors, respirators, etc.

Medical Operations Manager Duties:

- Liaison with hospitals and care centers
- Provide care for the ill
- Set up areas for the sick with guidance from public health authorities: for example, designate and establish a house or building as an infirmary (see stage 5)
- Establish makeshift infirmaries
- Establish nursing roles using survivors and those with existing immunity
- Provide supplies such as food and medicine to those who are ill
- Establish means of transportation for the ill and the deceased

Communications Leader Duties:

- If phone system fails maintain Ham radio (ARES/RACES) www.arrl.org

Coroner Function Duties:

- Coordinate transportation of dead bodies
- Document death information: time of death, surviving family, etc. (see stage 6)

Public Educators Duties:

- Maintain clear, consistent and up-to-date education directed toward the public
- Organize at-home school activities for area children

Mental Health Monitors Duties:

- Monitor mental health of response workers and community members
- Organize mental health treatment for those in need
- Work with public educators to inform community about maintaining mental health

Special Skills Duties:

- Include community members with skills needed for community maintenance such as mechanics, plumbers, electricians, computer technicians, etc.
- Work with volunteer coordinator and communications leader to assist community as necessary

Trained Alternates:

All specified roles, particularly the area leader and volunteer coordinator, should have trained alternates ready to assume responsibilities in the event that the originally designated individual falls ill.

Appendix G₁₃

Example: Home Patient Medical Record

Patient Name: Mary Smith
 Date of Birth: 3-31-1951
 Date symptoms first began: January 15, 2006
 1-17-05 3:00 PM Initial Note

1-17-05 6:30 PM

Subjective (S)₁₉: Mary became weak and faint today after suffering from muscle aches and pains for the last couple of days. She has trouble standing up without dizziness. She is nauseated and also complains of headache and sore throat. She is urinating but not as much as usual. She has been trying to drink more but has been busy taking care of the sick. She has not been getting much sleep for the last 2 weeks.

(S) Mary's sleeping on and off. She feels less faint but still dizzy. She is peeing

(O) Temp 100°F, Pulse 90/min, BP 100/60
 Fluid In: 1500 ml 24 ORS, Urine Out: 250 ml

(A) Flu, improved symptoms, patient still dehydrated but hydration underway

(P) Push more fluids

Objective (O): Vital Signs: Temp: 102°F, Pulse: 110/min and regular, Resp Rate: 22/min, BP 100/60 The skin is pale and mildly moist. Mary looks very tired but is awake and alert. Her mouth is moist.

Assessment (A): Flu with mild dehydration and fatigue

Plan (P): Push fluids (ORS), ibuprofen 800 mg every 24 hours as needed for temp > 101 or pain. Bed rest. Keep track of fluid intake and urine output. Take VS and check hydration, fluid input/output, and 4 times daily. (Use anti-nausea meds if available).

Appendix H



INFLUENZA (FLU)

FACT SHEET

Overview of Influenza Surveillance in the United States

The Influenza Branch at CDC collects and reports information on influenza activity in the United States each week from October through May. The U.S. influenza surveillance system has seven different components, including four that operate year-round that allow CDC to:

- Find out when and where influenza activity is occurring
- Determine what type of influenza viruses are circulating
- Detect changes in the influenza viruses
- Track influenza-related illness
- Measure the impact influenza is having on deaths in the United States

The Seven Components of Influenza Surveillance:

1. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) Collaborating Laboratories About 80 WHO and 50 NREVSS collaborating laboratories located throughout the United States report the total number of respiratory specimens tested and the number positive for influenza types A and B each week. Most of the U.S. WHO collaborating laboratories also report the influenza A subtype (H1N1 or H3N2) of the viruses they have isolated and the ages of the persons from whom the specimens were collected. Some of the influenza viruses collected by laboratories are sent to CDC for more testing.

2. U.S. Influenza Sentinel Providers Surveillance Network Each week, approximately 1,200 health-care providers around the country report the total number of patients seen and the number of those patients with influenza-like illness (ILI) by age group. For this system, ILI is defined as fever (temperature of $\geq 100^{\circ}\text{F}$ [37.8°C]) and a cough

and/or a sore throat in the absence of a KNOWN cause other than influenza. The percentage of patient visits to sentinel providers for ILI reported each week is weighted on the basis of state population. This percentage is compared each week with the national baseline of 2.2%. The baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons plus two standard deviations. Due to wide variability in regional level data, it is not possible to calculate region-specific baselines, and it is not appropriate to apply the national baseline to regional data.

3. 122 Cities Mortality Reporting System Each week, the vital statistics offices of 122 cities report the total number of death certificates received and the number of those for which pneumonia or influenza was listed as the underlying or as a contributing cause of death by age group. The percentage of all deaths due to pneumonia and influenza are compared with a seasonal baseline and epidemic threshold value calculated for each week.

4. State and Territorial Epidemiologists Reports State health departments report the estimated level of influenza activity in their states each week. States report influenza activity as no activity, sporadic, local, regional, or widespread. These levels are defined as follows:

- o **No Activity:** No laboratory-confirmed cases of influenza and no reported increase in the number of cases of ILI.

- o **Sporadic:** Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

- o **Local:** Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single region of the state.

- o **Regional:** Outbreaks of influenza or increases in ILI and recent laboratory confirmed influenza in at least 2 but less than half the regions of the state.

- o **Widespread:** Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state.

5. Influenza-associated pediatric mortality Influenza-associated pediatric mortality is a newly added nationally notifiable condition. Laboratory-confirmed influenza-associated deaths in children less than 18 years old are reported through the National Notifiable Disease Surveillance System.

6. Emerging Infections Program (EIP) The EIP Influenza Project conducts surveillance for laboratory-confirmed influenza related hospitalizations in persons less than 18 years of age in 60 counties covering 12 metropolitan areas of 10 states (San Francisco CA, Denver CO, New Haven CT, Atlanta GA, Baltimore MD, Minneapolis/St. Paul MN, Albuquerque NM, Las Cruces, NM, Albany NY, Rochester NY, Portland OR, and Nashville TN). Cases are identified by reviewing hospital laboratory and admission databases and infection control logs for children with a documented positive influenza test (viral culture, direct/indirect fluorescent antibody assay (DFA/IFA), reverse transcription-polymerase chain reaction (RT-PCR), or a commercial rapid antigen test) conducted as a part of routine patient care. EIP estimated hospitalization rates are reported every two weeks during the influenza season.

7. New Vaccine Surveillance Network (NVSN) The New Vaccine Surveillance Network (NVSN) provides population-based estimates of laboratory-confirmed influenza hospitalization rates for children less than 5 years old residing in three counties: Hamilton County OH, Davidson County TN, and Monroe County NY. Children admitted to NVSN hospitals with fever or respiratory symptoms are prospectively enrolled and respiratory samples are collected and tested by viral culture and RT-PCR. NVSN estimated rates are reported every two weeks during the influenza season.

Together, the seven influenza surveillance components are designed to provide a national picture of influenza activity. Pneumonia and influenza mortality is reported on a national level only. Sentinel provider and laboratory data are reported on a national level and by influenza surveillance region. (<http://www.cdc.gov/flu/images/usregmap.gif>). The state and territorial epidemiologists' reports of influenza activity are the only state-level information reported. Both the EIP and NVSN data provide population-based, laboratory-confirmed estimates of influenza-related pediatric hospitalizations but are reported from limited geographic areas.

It is important to remember the following about influenza surveillance in the United States

- All influenza activity reporting by states and health-care providers is voluntary.
- The reported information answers the questions of where, when, and what influenza viruses are circulating. It can be used to determine if influenza activity is increasing or decreasing, but cannot be used to ascertain how many people have become ill with influenza during the influenza season.
- The system consists of seven complementary surveillance components. These components include reports from more than 120 laboratories, 2,000 sentinel health care providers, vital statistics offices in 122 cities, research and health-care personnel at the NVSN and EIP sites, and influenza surveillance coordinators and state epidemiologists from all 50 state health departments, and the New York City and District of Columbia health departments.
- Influenza surveillance data collection is based on a reporting week that starts on Sunday and ends on Saturday of each week. Each surveillance participant is requested to summarize weekly data and submit it to CDC by Tuesday afternoon of the following week. Those data are then downloaded, compiled, and analyzed at CDC. The report is distributed and posted on the CDC Web site (<http://www.cdc.gov/flu/weekly/fluactivity.htm>) each Friday from October through May.

For more information, visit www.cdc.gov/flu or call the CDC Flu Information Line at 800-CDC-INFO (English and Spanish) or 888-232-6358 (TTY).

Appendix I

A Doctor's Letter during the Height of the 1918 Pandemic ¹³

In September 1918, the second pandemic influenza wave was making its way through America. Military bases were especially hard hit by the pandemic in the United States. Below is a reprint of a letter from a recently recruited military doctor assigned to a U.S. Army base in Massachusetts, Camp Devens. This was a training base for new recruits and was one of the worst affected by the flu. The letter is important for its clear description of the rapid course of the illness, how this pandemic flu differed so greatly from the usual seasonal variety, and how the medical resources of the camp had become exhausted by the sheer number of cases and the high case fatality rate.

Camp Devens, Mass. Surgical Ward No 16 29 September 1918 (Base Hospital)

My dear Burt- It is more than likely that you would be interested in the news of this place, for there is a possibility that you will be assigned here for duty, so having a minute between rounds I will try to tell you a little about the situation here as I have seen it in the last week.

As you know I have not seen much Pneumonia in the last few years in Detroit, so when I came here I was somewhat behind in the niceties of the Army way of intricate Diagnosis. Also to make it good, I have had for the last week an exacerbation of my old "Ear Rot" as Artie Ogle calls it, and could not use a Stethoscope at all, but had to get by on my ability to "spot" 'em thru my general knowledge of Pneumonias. I did well enough, and finally found an old Phonendoscope that I pieced together, and from then on was all right. You know the Army regulations require very close locations etc.

Camp Devens is near Boston, and has about 50,000 men, or did have before this epidemic broke loose. It also has the Base Hospital for the Div. of the N. East. This epidemic started about four weeks ago, and has developed so rapidly that the camp is demoralized and all ordinary work is held up till it has passed. All assemblages of soldiers taboo.

These men start with what appears to be an ordinary attack of LaGrippe or Influenza, and when brought to the Hosp. they very rapidly develop the most viscous [sic] type of Pneumonia that has ever been seen. Two hours after admission they have the Mahogany spots over the cheek bones, and a few hours later you can begin to see the Cyanosis extending from their ears and spreading all over the face, until it is hard to distinguish the colored men from the white. It is only a matter of a few hours then until death comes, and it is simply a struggle for air until they suffocate. It is horrible. One can

stand it to see one, two or twenty men die, but to see these poor devils dropping like flies sort of gets on your nerves. We have been averaging about 100 deaths per day, and still keeping it up. There is no doubt in my mind that there is a new mixed infection here, but what I dont know. My total time is taken up hunting Rales, rales dry or moist, sibilant or crepitant or any other of the hundred things that one may find in the chest, they all mean but one thing here -Pneumonia-and that means in about all cases death.

The normal number of resident Drs. here is about 25 and that has been increased to over 250, all of whom (of course excepting me) have temporary orders-"Return to your proper Station on completion of work". Mine says "Permanent Duty", but I have been in the Army just long enough to learn that it doesn't always mean what it says. So I dont know what will happen to me at the end of this.

We have lost an outrageous number of Nurses and Drs., and the little town of Ayer is a sight. It takes Special trains to carry away the dead. For several days there were no coffins and the bodies piled up something fierce, we used to go down to the morgue (which is just back of my ward) and look at the boys laid out in long rows. It beats any sight they ever had in France after a battle. An extra long barracks has been vacated for the use of the Morgue, and it would make any man sit up and take notice to walk down the long lines of dead soldiers all dressed and laid out in double rows. We have no relief here, you get up in the morning at 5:30 and work steady till about 9.30 P.M., sleep, then go at it again. Some of the men of course have been here all the time, and they are TIREED.

If this letter seems somewhat disconnected overlook it, for I have been called away from it a dozen times the last time just now by the Officer of the Day, who came in to tell me that they have not as yet found at any of the autopsies any case beyond the red hepatitis stage. It kills them before they get that far.

I don't wish you any hard luck Old Man but I do wish you were here for a while at least. It's more comfortable when one has a friend about. The men here are all good fellows, but I get so damned sick o Pneumonia that when I go to eat I want to find some fellow who will not "Talk Shop" but there ain't none nobow. We eat it, live it, sleep it, and dream it, to say nothing of breathing it 16 hours a day. I would be very grateful indeed if you would drop me a line or two once in a while, and I will promise you that if you ever get into a fix like this, I will do the same for you.

Each man here gets a ward with about 150 beds, (Mine has 168) and has an Asst. Chief to boss him, and you can imagine what the paper work alone is - fierce,-- and the Govt. demands all paper work be kept up in good shape. I have only four day nurses and five night nurses (female) a ward-master, and four orderlies. So you can see that we are busy. I write this in piecemeal fashion. It may be a long time before I can get another letter to you, but will try.

This letter will give you an idea of the monthly report, which has to be in Monday. I have mine most ready now. My Boss was in just now and gave me a lot more work to do so I will have to close this.

*Good Bye old Pal,
"God be with you till we meet again"
Keep the Bowels open.
(Sgd) Roy.*

Glossary

Acute infection	Afflicted by a disease exhibiting a rapid onset followed by a short, severe course
Airborne transmission	While airborne transmission over long distances (through building ventilation systems for example) may not be as likely, small particle aerosolization over short distances (throughout an enclosed room for example) may play a role. Small particles (less than 5 microns in size) hang in the air in rooms with poor circulation and may reach the lower respiratory tract more easily than large droplets. This is the case for the bacteria that causes tuberculosis and may be controlled through the use of specialized ventilator masks.
Asymptomatic	Asymptomatic means there are no symptoms of disease. A person is said to be asymptomatic if an illness or condition is present without symptoms; the person has recovered from an illness or condition and no longer has any symptoms; if he or she is healthy or has a particular illness or condition that usually does not produce symptoms.
Autopsy	An autopsy is a medical procedure consisting of a thorough examination performed on a body after death to evaluate disease or injury that may be present and to determine the cause and manner of a person's death.
CDC	Centers for Disease Control and Prevention
Clinical attack rate	The percentage of the population that develops influenza with symptoms of infection
Contact transmission	Refers to direct skin-to-skin contact between individuals and indirect contact with objects in the environment. Frequent hand washing and the use of disinfectants can control this mode of transmission.
Coroner	The Coroner investigates and determines the mode, manner and cause of death of decedents under the Coroner's jurisdiction
Cremation	The practice of disposing of a corpse by burning. This often takes place in a crematorium or crematory
Isolation	Separation and restriction of movement of sick individuals. Isolation is recommended for the time period the individual is deemed infectious.
Large droplet transmission	Large droplets are greater than 10 microns and contain viral particles. They are dispersed by coughing, sneezing, or talking, and are deposited on the mucous membranes of other individuals (nose, mouth, eyes, etc.). Large droplets travel usually within a radius of 3 feet and hence are the basis for the infection control guideline of maintaining greater than a 3-foot radius between people.
Morbidity	The state of being diseased, the degree or severity of a disease, the prevalence of a disease: the total number of cases in a particular population at a particular point in time, or the incidence of a disease: the number of new cases in a particular population during a particular time interval

Morgue	A room used for the storage of human remains
Mortality	The number of deaths (from a disease or in general) per 1000 people. It is distinct from morbidity rate, which refers to the number of people who have a disease compared with the total number of people in a population.
Mortuary	(technical definition) A cold chamber used to keep the deceased from seriously decomposing; this practice exists for the sake of recognition of the deceased and to allow time to prepare for burial
Pneumonia	An inflammation of the lungs that is often caused by infection with viruses, bacteria, or fungi. Signs and symptoms include difficulty breathing and respiratory failure. Other complications may result as well, such as the lungs quickly filling with fluid and becoming very stiff, making it difficult or impossible to continue breathing on one's own. If severe enough, you may not be able to stay alive without medical support, such as a ventilator or someone physically providing oxygen with an oxygen bag. Given the situation, ventilators will be in high demand and in short supply.
Post Traumatic Stress Disorder	An anxiety disorder characterized by avoiding stimuli associated with a traumatic event, re-experiencing the trauma, and hyperarousal, such as increased vigilance
PPE	Personal protective equipment
Quarantine	Separation and restriction of movement of persons who are well, but may have been exposed to an infectious agent. Quarantine typically lasts for as long as the disease incubation period (time between exposure and onset of symptoms) after the last known exposure.
Secondary infection	A secondary infection is an infection that occurs during or after treatment of another, already existing infection. It may result from the treatment itself or from alterations in the immune system. For example, the development of bacterial pneumonia following a viral upper respiratory infection.
Social distancing	Methods to reduce the frequency and closeness of contact between people. Generally, social distancing refers to mass gatherings of people, but the same methods can be applied to home settings.
Transmission	The conveyance of infection from one person to another
Vital signs	Vital signs show an individual is alive. They include heart beat, breathing rate, temperature, and blood pressure. These signs may be watched, measured, and monitored to check an individual's level of physical functioning. Normal vital signs change with age, sex, weight, exercise tolerance, and condition. Normal ranges for the average healthy adult vital signs are Temperature: 97.8 - 99.1°F/average 98.6°F Breathing: 12 - 18 breaths per minute Pulse: 60 - 80 beats per minute (at rest) Blood Pressure: Systolic: less than 120 mm of mercury (mm Hg) Diastolic: less than 80 mm Hg
WHO	World Health Organization