Preparing for

Pandemic Flu
The Oregon Worker Illness and Injury Prevention Program

The Oregon Worker Illness and Injury Prevention Program (OWIIPP) in the Oregon Department of Human Services Public Health Division has been identifying and preventing work-related illnesses, injuries and deaths for nearly 20 years. Through funding from the National Institute for Occupational Safety and Health the program conducts surveillance to identify patterns of illness and injury. OWIIPP also works with partners to address concerns related to priority conditions, populations, occupations and industries.

OWIIPP focuses on burn injuries, acute pesticide poisonings, work-related asthma, and musculoskeletal disorders and other illnesses and injuries. The program currently is collecting data on 19 occupational health indicators, which are measures of work-related illnesses, injuries or factors associated with worker health. Examples include counting the number of work-related deaths and work-related pesticide poisonings. OWIIPP also is conducting work-related burn injury surveillance and working with partners to reduce the number of burn injuries in the workplace.

For more information about OWIIPP, visit www.oregon.gov/DHS/ph/owiipp/index.shtml

The Oregon Public Health Emergency Preparedness Program

Oregon’s Public Health Emergency Preparedness Program (PHEP) develops plans and procedures to better prepare our state to anticipate, respond to and recover from all types of public health emergencies.

With funding and guidance from the Centers for Disease Control and Prevention and Hospital Preparedness Program, the PHEP uses an all-hazards approach to emergency planning and response in the areas of disease surveillance and epidemiology, laboratory response, hospital/health care preparedness and response, emergency alert notification, risk communication and public information, and training and exercises.

For more information about PHEP, visit www.oregon.gov/DHS/ph/preparedness/index.shtml

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Introduction

According to the World Health Organization, the world is overdue for an influenza pandemic. A pandemic is a disease that can be defined by three criteria:

1. There must be little or no human immunity;
2. It must infect humans and cause illness; and
3. It must spread easily and sustainably (without interruption) among humans.¹

A pandemic begins as an epidemic, when a disease emerges in one region of the world against which humans have no natural immunity and for which no effective vaccine is currently available.² With the current ease of local, national, and international travel and transportation of goods, such a disease could be spread around the world in a matter of days or weeks, transforming a localized epidemic into a global pandemic.

Our individual daily lives are always disrupted when we get sick, but when large groups of people become ill, we see more dramatic effects on businesses, schools and health care facilities.

Some possible effects of a pandemic include:

- Overwhelmed medical facilities;
- Shortages of vaccines and antibiotics to treat secondary infections;
- A six-month delay period for the development of a new vaccine;
- Unpredictable disease spread;
- Shortages of personnel in businesses and community services, including emergency response services; and
- Economic effects of a decreased workforce, including increased demand for social and welfare support.

By planning ahead, the impact of an influenza pandemic can be minimized. This publication provides some guidelines for minimizing disruptions in our everyday lives and preventing the spread of disease.
Scope of the problem

Pandemics appear to occur on a semi-regular basis. By far the greatest pandemic of the 20th century, the 1918–1919 “Spanish flu” caused an estimated 40–50 million deaths worldwide. There also have been two other pandemics in the 20th century: the “Asian flu” of 1957, and the “Hong Kong flu” of 1968, which were much less devastating. According to the Centers for Disease Control and Prevention, a modern pandemic could result in 2 million to 7.4 million deaths worldwide; however, the impact of a flu pandemic would extend far beyond mortality rates.
Description and differentiation of pandemic flu

Pandemic flu vs. seasonal flu

Flu viruses constantly undergo small structural changes that enable them to evade our immune systems; that is why we must get vaccinated yearly for seasonal flu. Some immunologists call these changes “drift” because they change like ripples in sand. But in the case of pandemic flu, the structure of the virus “shifts” like an earthquake, leaving human immune systems susceptible to an entirely new disease. Because we lack immunity, the disease can easily spread and quickly reach a global scale.

Pandemic flu vs. avian flu

Avian flu currently is a concern because it has infected humans and has a high (greater than 50 percent) mortality rate. However, the avian flu virus (H5N1) is not a human pandemic. In order for a virus to become a human pandemic, it must meet the three criteria of a pandemic. The avian flu virus currently meets the first two: it has infected humans, and we have little immunity to it. However, there has not yet been any efficient or sustained human-to-human transmission of the disease. If avian flu were to mutate and become more transmissible, it could turn into a pandemic — that is why scientists are monitoring the spread of the disease and working on new vaccines to protect us in case of a new pandemic strain.
Stages of a pandemic

Different health agencies have different scales to rate the severity of a pandemic. To simplify, Oregon is using only two levels of severity: moderate and severe. A moderate pandemic is distinguished from a severe pandemic by its lower (less than 1 percent) case fatality rate. A severe pandemic is one with a greater than 1 percent case fatality rate; in other words, any individual who has contracted influenza has a greater than 1 in 100 chance of death. A severe pandemic is expected to be highly disruptive to society because communities will take extra steps, such as closing schools and raising personal protection standards, to prevent the spread of disease.

Table 1. A description of health impacts of moderate and severe pandemics in Oregon

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Moderate pandemic</th>
<th>Severe pandemic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illness</td>
<td>1.17 million</td>
<td>1.17 million</td>
</tr>
<tr>
<td>Outpatient</td>
<td>585,000</td>
<td>585,000</td>
</tr>
<tr>
<td>Hospitalized</td>
<td>11,245</td>
<td>128,700</td>
</tr>
<tr>
<td>Intensive care</td>
<td>1,677</td>
<td>19,305</td>
</tr>
<tr>
<td>Ventilator use</td>
<td>845</td>
<td>9,646</td>
</tr>
<tr>
<td>Death</td>
<td>2,717</td>
<td>24,700</td>
</tr>
</tbody>
</table>
Aside from establishing two levels of severity, Oregon has identified three stages of response to a pandemic — **alert, standby** and **activate** — and different sectors of the government have developed specific plans for each one of these stages.

### Table 2. Three stages of pandemic response

<table>
<thead>
<tr>
<th>Stage</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alert: No cases in U.S.</strong></td>
<td>- Evaluation of the severity of the virus and attempts to predict what will be required</td>
</tr>
<tr>
<td></td>
<td>- Revision of already-existing plans to fit specific events</td>
</tr>
<tr>
<td></td>
<td>- Education on infection control</td>
</tr>
<tr>
<td><strong>Standby: 1st case in U.S.</strong></td>
<td>- Prepare for social distancing measures and disruptions to daily routines</td>
</tr>
<tr>
<td></td>
<td>- Increased emphasis on infection control</td>
</tr>
<tr>
<td><strong>Activate: 1st cluster in Pacific Northwest</strong></td>
<td>- Implement plans for community mitigation</td>
</tr>
</tbody>
</table>
The influenza pandemic of 1918–1919

Because of the devastating effects of an influenza pandemic, it is crucial to take precautions against spreading disease. The influenza pandemic of 1918–1919 is an example of why it is so important to be prepared for a pandemic.

While there were isolated reports of severe cases of flu beginning in March 1918, the federal Public Health Service did not officially name the flu a reportable disease until September 27, 1918, at which point the pandemic was so widespread that most states could not keep accurate records. As a result, epidemiologists were unable to accurately monitor the spread and effects of the disease.

Compounding the problem was a shortage of doctors, nurses and hospital beds due to World War I. Many medical personnel got ill or died on the way to destinations that required their assistance. Many of those who did arrive safely found that they were not prepared to face the severity of the situation.

Public services were overwhelmed by the disaster. Because of personal illness and the need to stay at home to care for loved ones, high absentee rates caused a collapse in mail, telephone and garbage services. Even employees of the federal Public Health Service failed to appear at work, so the service was unable to meet demands for information.
The general public also suffered from a lack of knowledge about how the disease was spread. Because it was not known at the time that influenza was caused by a virus, public officials advocated wearing gauze masks; however, gauze masks provide no real protection against viruses. States outlawed spitting in public, individuals experimented with home remedies, and advertisements touted magic cures for influenza. None of these strategies were effective in preventing the spread of the disease. By the summer of 1919, nearly 675,000 Americans were dead, and the pandemic caused tens of millions of deaths worldwide.

What can we learn from the pandemic of 1918–1919?

Although medical and public information about the cause and spread of disease have improved greatly since 1919, there still are important lessons from that pandemic that guide our actions today, including:

- The importance of outreach and education about disease transmission, and each person’s role in reducing the spread of disease.
- The need for individuals to be prepared with appropriate personal protective equipment (PPE) (which may include gloves and/or respirators) and by storing a supply of food, water, and important medications in case of emergency.
- Medical personnel should be particularly conscious of protecting themselves against disease spread.
- To prevent economic collapse and failure of public services, employers should create emergency plans and assess risk in the workplace.

To learn more about The Great Pandemic of 1918–1919, visit http://1918.pandemicflu.gov.
Individual preparedness

To prepare for a pandemic, individuals should be aware of three safeguards: minimizing risk of infection to themselves, minimizing the risk of infecting others, and maintaining the continuity of life.

Tips for minimizing risk of infection and transmission

- Establish good personal hygiene habits, including hand washing, covering coughs and sneezes with upper arms instead of hands, and using disinfectants to clean potentially contaminated surfaces.
- Provide good tissue disposal by using trash cans with foot pedals.
- Stockpile soap, hand sanitizer and tissues. If your job requires it, stockpile personal protective equipment (PPE) ahead of time.
- Health care workers and food service employees should be particularly aware of proper PPE use to avoid becoming infected or transmitting disease to others.
- Stay home if ill or if exposed to people who are ill!

Tips for maintaining the continuity of life at home

- Plan for spending a considerable period of time at home, either caring for yourself or for family members. This includes stockpiling a supply of food, water, and necessary prescription and non-prescription medications.
- Plan to modify work, school and social activities to minimize contact with those outside the household. Think about recreational activities that can be done at home. If you participate in group religious or community activities, speak to your organization about alternatives to large group gatherings.
• Consider child care. In the event of a severe pandemic, the state of Oregon may close all schools (kindergarten through university) and licensed child care centers for up to 12 weeks. Think about creating a child care group with friends, neighbors or coworkers to supervise younger children while parents are at work. Research currently suggests that child care group size of fewer than six children is associated with fewer respiratory infections.  

• Designate a caregiver who can stay at home in the event of school closures or illness in the family, and an alternative in case the caregiver becomes ill.

• Ensure your household has a list of emergency contacts, including local emergency and community services.

• Do not stockpile antiviral medications such as oseltamivir (Tamiflu®) and zanamavir. The CDC advises that these medications should be distributed under medical supervision because mismanagement of antiviral medications could lead to possible increased drug resistance and may jeopardize the drugs’ effectiveness.

Resources for individuals

PandemicFlu.gov


Pittsburgh Influenza Prevention Project

Workplace preparedness

The Occupational Safety and Health Administration (OSHA) has prepared extensive guidelines for employers, but employees also can evaluate the risk levels of their jobs according to OSHA’s occupational risk pyramid:

Figure 1. OSHA worker risk pyramid

Table 3. Criteria for evaluating worker exposure risk

<table>
<thead>
<tr>
<th>Risk level</th>
<th>Criteria</th>
<th>Some examples of occupations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High Risk</td>
<td>High potential exposure to high concentrations of known or suspected sources of pandemic flu during specific (aerosol-generating) medical or lab procedures</td>
<td>Health care workers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Laboratory personnel</td>
</tr>
<tr>
<td>High Risk</td>
<td>High potential exposure to known or suspected sources of pandemic flu</td>
<td>Health care workers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medical transport</td>
</tr>
<tr>
<td>Medium Risk</td>
<td>Frequent, close contact (within 6 feet) exposures to known or suspected sources of pandemic flu</td>
<td>Schools</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-density retail</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Receptionists</td>
</tr>
<tr>
<td>Lower Risk</td>
<td>Do not require contact with people known to be infected, nor frequent close contact (within 6 feet) with the general public</td>
<td>Office employees</td>
</tr>
</tbody>
</table>
Tips for maintaining the continuity of life at work

Employers should create pandemic plans, including stockpiling appropriate PPE. For more guidance, follow the link below.

- Employers should prohibit sick employees from coming to work, and should devise strategies for maintaining business continuity even with many employees absent.
- Consider social distancing strategies. Is there a Plexiglas sneeze guard between receptionists and clients? Can you minimize time spent in crowded public transportation? Would it be possible to work from home? How can you minimize face-to-face meetings? Use your arm’s length spread as a guideline: if you cannot touch another person with your fingertips, you’re at lower risk for transmission.
- Plan for potential income loss.

Resources for employers


Resources for health care workers
Prevention recommendations

Hand washing and hand rubs

The most basic form of infection control is one you are already familiar with: hand washing. During a pandemic, it is even more important to wash hands frequently with soap and water after using the restroom, before handling food, after coughing or sneezing, and between contacts with potentially infected people. Be sure to lather for at least 10 seconds, and to scrub the front and back of the hands, as well as between fingers and under fingernails. If your hands are not visibly dirty and you are in frequent contact with high-risk populations, such as children or ill individuals, you can use an alcohol-based antibacterial hand rub. Again, be sure to rub over all surfaces of the hand, including fingernails, and allow a few seconds for the rub to dry. Hand washing and rubs are easy and important ways to reduce the spread of infection from person to person.

Antivirals and vaccines

While antiviral medications and vaccines may be available, they will certainly be in short supply. Oregon’s share of the national stockpile includes only enough antiviral medications to treat 15 percent of the state’s population during a pandemic. Vaccines will only become available after a virus has been identified, and development of a vaccine may take six to nine months. We should take other precautions to limit the spread of disease and manage the demand for antivirals and vaccines.
Personal protective equipment (PPE)

Personal protective equipment (PPE) is a material designed to be worn and to provide a barrier between the hazard and the wearer. PPE is effective as long as it is used properly and its limitations are not exceeded. Examples of PPE are gloves, goggles, facemasks, respirators and gowns. By assessing your risks, you can plan what level of PPE is appropriate for your situation; however, it is important to use PPE properly and learn how to put it on and take it off without risk of contamination. In the workplace, employers should create pandemic flu plans and make sure employees are familiar with PPE.


Infection control practices for health care providers

The Centers for Disease Control and Prevention recommends that health care providers observe Standard Precautions, which are based on the principle that all body fluids (except sweat), non-intact skin, and mucous membranes may contain transmissible infectious agents. Standard Precautions apply to any health care setting whether or not the patient appears infected. These precautions include hand hygiene, use of PPE, safe injection practices, and use of PPE and proper sterilization practices around potentially contaminated equipment. Health care providers should be trained in Standard Precautions and encouraged to practice them properly and consistently.

Facemasks and respirators

It is important to be aware of the difference between a mask and a respirator. Facemasks are Food and Drug Administration approved to prevent inhalation of droplets and contamination from fluids, but they may not prevent inhalation of small airborne contaminants such as viruses. Respirators (such as the N95) are certified by the National Institute for Occupational Safety and Health as capable of protecting against inhalation of viruses, but they must be fit-tested and individuals must be trained in proper use. It currently is recommended that in the event of a pandemic, individuals with medium-risk occupations should use facemasks and individuals with high- and very high-risk occupations should be fit with respirators.

Masks and respirators may look similar, but they function very differently!

For more information about masks and respirators, see PandemicFlu.gov, which contains guidelines for mask and respirator use in community, workplace, and health care settings at www.pandemicflu.gov/vaccine/mask.html.
Conclusion

When a pandemic hits, many areas of everyday life will be disrupted. Our best defense against pandemic flu is to develop clear and detailed plans for preventing its spread and maintaining our continuity of life. If we create preparedness plans with our families, in our workplaces, and our communities well in advance, we will be better-equipped to manage the consequences of an influenza pandemic.
Additional resources

PandemicFlu.gov
One-stop access to U.S. Government avian and pandemic flu information. Available at www.pandemicflu.gov

PandemicFlu.gov: Planning & response
Resources for individuals, workplace, schools, healthcare providers, community organizations, and state & local governments. Available at www.pandemicflu.gov/plan/

Oregon Department of Human Services. Pandemic influenza
Available at www.oregon.gov/DHS/ph/acd/flu/panflu.shtml
References


