

# The



Arizona Water & Pollution Control Association

# Newsletter

## ARE YOU READY FOR A PANDEMIC?

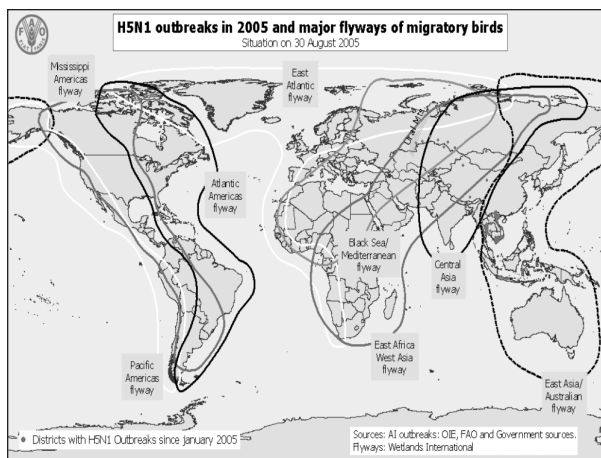
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**A**LTHOUGH AVIAN INFLUENZA IS NOT IN THE NEWS AS MUCH AS IT WAS EVEN A YEAR AGO, the threat of worldwide pandemic influenza is still very real. The question of pandemic influenza is not will it occur, but when. Even in the face of severe community disruptions in workforce, delivery of services and goods, and overwhelming medical needs, water and wastewater services must continue to be provided. The more utilities plan now, the better off they will be when the pandemic occurs.

### BACKGROUND

Influenza is a respiratory disease caused by a virus. This microscopic germ causes one of the most common infections each year, with 10-30% of the population being infected. The virus is spread via respiratory droplets when an infected person sneezes or coughs, and a susceptible person inhales the droplet or the droplet contaminates an object that a person touches and subsequently touches the mucous membranes of the nose, mouth or eyes. Within one to three days, an individual will begin developing symptoms, usually fever, muscle pain, cough or sore throat. This person can be contagious one day prior to onset of symptoms through the first two days of illness.

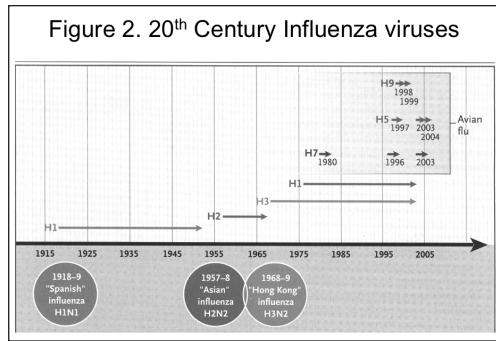


Unlike most viruses, influenza can infect other animals and birds. Thus birds can serve as a reservoir or a constant source of the virus as is seen with the avian influenza H5N1 now spreading across the world (see map at left). Some birds become ill while others are unaffected but can still spread the virus. The virus changes and mutates constantly, and so there are multiple strains circulating at the same time. With this ability to infect multiple hosts, the virus can mix genetic material with another influenza virus in the same animal. Because of the changing strains, a new vaccine is needed each year. The World Health Organization monitors the circulating

strains and predicts which strains are likely to dominate the season and therefore which strains to include in each year's vaccine. When the virus undergoes a major genetic change, the virus can become a new strain to which no one has partial immunity. This is the first of four criteria for an influenza pandemic. Transmission of the virus from animals to humans is the second. The third criterion is the ability of the virus to cause disease in humans. The final criterion is efficient transmission of the virus from human to human. The avian influenza H5N1 fulfills the first three criteria, and with additional mutation may satisfy the final criterion and become the cause of the next influenza pandemic.

There have been three influenza pandemics in the past century, the most devastating being the

“Spanish flu” of 1918. Genetic reconstruction of the virus revealed it was avian in origin. The first cases appeared in the U.S. with global spread taking approximately one year. There were between 20 and 50 million deaths worldwide with 500,000 deaths in the U.S. This pandemic varied from the usual age distribution of deaths among the very young and old in that it affected young adults as well. Health officials speculate that the robust immune response of young adults resulted in greater sickness and mortality rates. Additionally, the pandemic swept through in 3 waves with 45 to 75 days between each wave, lasting approximately 10 months in total.



The second influenza pandemic occurred in the 1957 – 1958 influenza season. The so called “Asian” influenza started in China and spread around the world in six months. The first wave affected school age children and the second wave was seen predominantly in adults. There were 80,000 deaths attributed to this pandemic in the U.S., most among the very young and elderly. The third influenza pandemic started in 1968, and was called the “Hong Kong” influenza. Individuals exposed to the 1957 strain had partial immunity to this virus. These past pandemics provide proof of the inevitability of another pandemic.

## PREPARATIONS FOR AN INFLUENZA PANDEMIC

With these historical lessons, public health officials developed the following assumptions about a future influenza pandemic for planning purposes.

- Each person will, on the average, infect two others
- Expect at least a 30% attack rate (see Table 1); however this will likely vary by age group
- There will be insufficient anti-viral drugs and medical equipment available
- Vaccine will take six to nine months to develop using current technology
- Expect three waves of influenza, lasting 2 to 3 months each
- Regular seasonal influenza (October to April) may be occurring simultaneously

Pandemic Influenza Plans have been developed at the national, state and local levels. Each of these plans address specific elements:

- Laboratory - supplies, testing and strain typing
- Surveillance - monitoring initial detection and spread of influenza
- Immunizations – priority groups, mass vaccination clinics, distribution logistics
- Infection control – recommendations for preventing spread
- Clinical management – treatment, anti-viral alternatives, ventilator use
- Anti-viral drugs – priority groups, distribution, possible outbreak control
- Hospital and healthcare coordination – surge capacity, appropriate use of acute care facilities and emergency rooms
- Community containment and quarantine – for use early on in the pandemic, social distancing, closure of social gatherings or schools, outbreak control
- Psychosocial issues – dealing with significant mortality, fear of contagion, watching the spread of a pandemic, rationing of care and treatment
- Risk communication – public, ill, exposed, healthcare workers, essential services
- Information management – situational awareness, tracking of drug and vaccine inventories, coordination between agencies and local, state and federal level

These plans make up a series of systems and capacities to address the above elements, such as surveillance systems, mass vaccination clinics, interoperable communication modes, quarantine authorities, volunteer recruitment and tracking systems, call centers, development of educational materials, and exercises or drills to test and improve the

plans. Arizona Department of Health Services’ Influenza Pandemic Response Plan is available at [www.azdhs.gov/pandemicflu/](http://www.azdhs.gov/pandemicflu/). Contact your local health agency (county or tribal) to see a copy of their plan or for consultation in developing a plan for your organization.

**Table 1. Estimated Impact in Arizona**

Illness	1.81 million (30%)
Outpatient medical care	907,000 (50% of ill)
Hospitalization	99,700 (11% of ill)
ICU care	14,900 (15% of hospitalized)
Mechanical ventilation	7,500 (7.5% of hospitalized)
Deaths	38,271 (2.1% of ill)

## UTILITY PLANNING FOR A PANDEMIC

According to the US Environmental Protection Agency, responsibilities of critical infrastructure organizations, such as water and wastewater utilities, in coping with a pandemic include the following:

- Establishing an ethic of infection control in the workplace
- Implementing contingency plans to deliver essential goods and services in times of worker absenteeism
- Developing plans to allow workers to provide services from home

- Providing mutual support to other members of the sector

Absenteeism from the workplace may be as high as 40% during peak pandemic periods. This high rate will occur not only because of those who are ill with pandemic influenza, but also because of those who think they may have pandemic influenza but are actually ill from other causes, and because of the need to care for ill family members. We must recognize that in the event of a pandemic taking care of family will be a top priority of the workforce. When schools, day-care centers, libraries, and other community centers are closed to prevent the spread of infection, then the children of employees will also need to be cared for in the home.

So, how to respond?

Utilities must engage in detailed planning to ensure continuity of operations by identifying the following:

- Critical functions that must be maintained and strategies for performing those functions
- Functions that could be temporarily discontinued or performed via telecommuting for several weeks
- Minimum staffing needed to maintain critical functions, and work schedule and office changes that would better utilize available staff
- Cross-training necessary and training for all staff in the realities of the risks of infection and how to protect themselves from exposure (such as social distancing)
- Critical inventory requirements (supplies necessary to maintain critical functions and to accommodate staff needs such as prolonged shifts at treatment plants)
- Technology requirements to enable communication and telecommuting

- Human resources policies that must be modified to address absenteeism (sick leave, flex shifts)
- How to maintain revenue and payroll functions
- Public information strategies

Because every sector of the community will be impacted by a pandemic event, utilities also need to think about reduced reliability in their communities' communication infrastructure, power, fuel availability, transportation services, contractor and vendor services, and coordinate in advance, as much as possible, how to cope with potential disruption in those services. Expect that mutual aid outside local or state jurisdictions will be limited or unavailable.

And finally, effective preparedness, timely response to, and recovery from a potential disaster of this magnitude necessitate integrated partnerships between the private sector and all levels of government, including utility management and their governing boards or councils. Reliable, real-time, two-way exchange of information between government and industry will provide valuable assistance in planning for and responding to a pandemic.

## RESOURCES

The Centers for Disease Control and Prevention have developed checklists for businesses and for personal preparedness. These are available along with other informative materials on their website at [www.pandemicflu.gov](http://www.pandemicflu.gov). An influenza education toolkit was also developed by the Arizona Department of Health Services and is available at [www.azdhs.gov/flu/flu\\_toolkit.htm](http://www.azdhs.gov/flu/flu_toolkit.htm).