

## Pandemic Influenza and Emergency Preparedness

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## Agenda

- Define influenza and discuss transmission
- Differentiate among seasonal flu, avian (bird) flu, swine flu and pandemic flu
- Identify elements of an influenza pandemic
- Discuss the impact of an influenza pandemic
- Identify community and individual interventions to limit the spread of the virus
- Discuss infection control issues of particular concern for funeral directors
- Address issues of business continuity planning

## Influenza

- Flu is a contagious respiratory illness caused by a virus
- It can cause mild to severe illness and sometimes causes death

## Influenza infectious period

- A person infected with the flu virus can transmit the virus one to two days before symptoms start.
- Adults continue to transmit up to 7 days after symptoms start
- Young children continue to transmit for 10 or more days after symptoms start

## How Does Influenza Spread?



- Spread is person-to-person
- Mostly spread by coughing and sneezing
- Less often spread by touching contaminated surfaces or hands

Source: "Infectious disease." Online Photograph. Encyclopaedia Britannica Online. 21 Oct. 2007. <<http://www.britannica.com/eb/z/1/9/104>>

## Influenza symptoms

- Fever (usually high) and chills
- Non-productive cough (dry)
- Extreme tiredness (fatigue)
- Body aches
- Sore throat
- Runny or stuffy nose
- Headache
- Diarrhea and vomiting (rare in seasonal flu, but more common in children)



Source: Centers for Disease Control and Prevention. 2000. 030. 002

### Who is at increased risk of complication from influenza infection?

- Children less than 2 years old
- People 65 years or older
- Pregnant women
- People who have asthma, chronic pulmonary, cardiovascular, hepatic, hematological, neurological, neuromuscular, or metabolic disorders such as diabetes
- People who have immunosuppression (including immunosuppression caused by medications or by HIV)
- Residents of nursing homes, other congregate living situations

### Influenza viruses

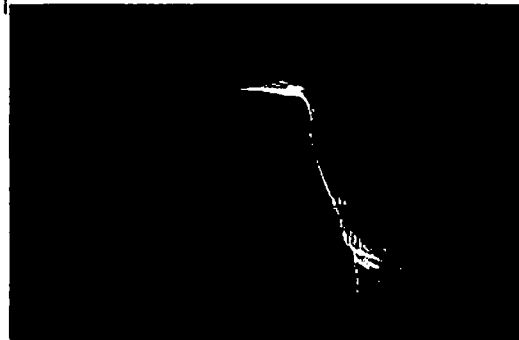
- **Influenza A viruses**
  - cause of seasonal flu and capable of causing pandemic flu
  - Further differentiated by surface antigens (proteins on the surface of the virus) Hemagglutinin (HA) -16 known subtypes and Neuraminidase (NA) - 9 known subtypes
- **Influenza B viruses**
  - cause of seasonal flu but not pandemics
- **Influenza C viruses**
  - not capable of causing seasonal flu epidemic or pandemic flu. Symptoms usually mild or sub-clinical



\*Source: Centers for Disease Control and Prevention. [www.cdc.gov](http://www.cdc.gov)

### Seasonal flu

- Seasonal flu occurs yearly during the winter months in the Northern Hemisphere
- Every year in the US on average
  - >200,000 people are hospitalized
  - 36,000 people die
- Most people who get the flu recover within 1-2 weeks without medical treatment
- Best prevention is flu vaccination



### Avian (bird) flu

- Wild birds (especially waterfowl and shore birds) are the normal reservoir for avian influenza viruses
- Avian influenza viruses sometimes infect domesticated birds (chickens, turkeys, etc.)



### Transmission of the virus from birds to humans

- People become infected with avian influenza viruses through direct contact with infected birds
- Confirmed cases have been reported since 1997
- Close interaction between domestic birds and humans is common in countries reporting H5N1 (avian flu) infection in humans
- Inhalation, rather than consumption, is the mode of transmission

### Current concerns about avian (bird) flu

- Historically unprecedented disease outbreak in poultry caused by H5N1
- Human case reported as of June 2, 2009
  - 433 cases
  - 262 deaths
- No sustained human to human transmission



### Swine flu

- Swine influenza is a respiratory disease of pigs caused by an influenza A virus
- Humans working with infected pigs can be infected with swine flu
  - human to human transmission is rare
- Pigs also can become infected with avian influenza viruses or human influenza viruses
- Antigenic shift (reassortment) can occur in pigs that are infected with two or more influenza viruses at the same time

### New or novel virus

- Antigenic drift – gradual genetic changes
- Antigenic shift (reassortment) – exchange of genetic material between 2 or more influenza viruses, usually during co-infection in a human or in a pig

### Novel influenza A (H1N1)

This novel virus was detected in Mexico and the US in April, 2009

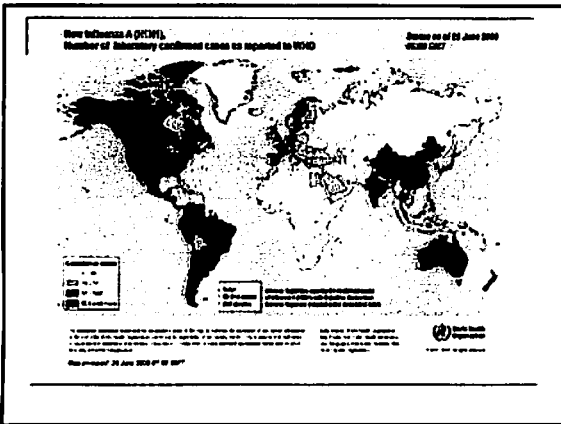
- Novel influenza A (H1N1) contains 2 genes that are seen in viruses of pigs, avian influenza virus, and human influenza virus
- Spread person to person, probably the same way as seasonal flu
- NOT spread by food. You CANNOT get virus by eating pork or pork products



\*Source: Centers for Disease Control and Prevention, [www.cdc.gov](http://www.cdc.gov)

### Severity of H1N1

- CDC is currently trying to determine the severity of the disease from those who have been affected
- H1N1 has sickened people in more than 110 countries
  - More than 27,000 cases in the US
  - Over 70,000 worldwide
  - More than 260 deaths worldwide
  - Appears to spread easily person to person
  - Causes mild to moderate disease



### Pandemic influenza

- A worldwide outbreak of disease in numbers clearly in excess of normal
- Characteristics:
  - A new or novel influenza virus emerges (everyone is susceptible)
  - The virus can infect humans, causing serious illness
  - Highly transmissible among humans
- Can be caused by high pathogenic Avian influenza viruses that mutate

### Pandemic waves

- Pandemics occur in multiple waves of disease outbreaks (i.e. the illness resurfaces in the community).
- A wave may be present in a community for 6 to 8 weeks, possibly as long as 3 months
- The time between pandemic waves is unpredictable.
- *The severity of illness may vary among waves*

### Past pandemics

Pandemic	Deaths in US	Deaths worldwide	Population Affected
Spanish Flu (H1N1) 1918-19	875,000	40 million	People 20 to 40 years old
Asian Flu (H2N2) 1957-58	70,000	1-2 million	Infants, elderly
Hong Kong Flu (H3N2) 1968-69	38,000	700,000	Infants, elderly

### Response to a pandemic

- CDC has described 4 community interventions to limit the spread of the virus during an influenza pandemic
- The degree to which each intervention is used will depend on the severity of the disease – the more lethal the virus, the greater the intervention

### What to expect from pandemic flu

- Pandemic flu is unlike other disasters
  - Health care systems will be overwhelmed
  - Absentee rates of 25% to 40%
  - Disruption of public services
  - Difficulty obtaining necessities
  - Economic and social disruptions
  - Change of routines to limit the spread of the virus

## Protection against influenza

### Pharmaceutical interventions

- Vaccines
  - Vaccine for pandemic flu is unavailable
  - Production has begun on H1N1 vaccine, clinical trials to begin soon
  - Some H1N1 vaccine may be available this fall
  - Expect limited supplies



## Protection against influenza

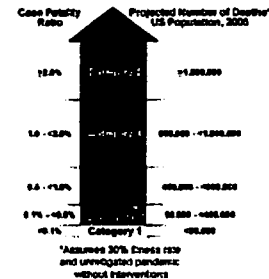
### Pharmaceutical interventions

- Oseltamivir (Tamiflu) and zanamivir (Relenza)
- Antiviral medicine can decrease time person is ill, may decrease risk of complications
- Antiviral medicine can prevent infection
- Virus could become resistant to antiviral medicines
- Supplies are limited

## Protection against influenza

### Non-pharmaceutical interventions

- Healthy hygiene
  - Proper hand washing
  - Cough etiquette
    - Cover mouth and nose with a disposable tissue
    - If no tissue, cough into fiber of sleeve



### Interventions by Setting

**Home**  
 Voluntary isolation of ill persons, early and frequent isolation and use of antiviral medicine  
 (1) 10-15 days (2) 1-2 days  
 Isolation of contacts of ill persons (household, school, workplace, community, etc.)  
 School  
 Child care/daycare  
 Workplace / Community  
 Adult home care

### Pandemic Severity Index

Intervention	Severity Index
Voluntary isolation of ill persons	Highly effective
Isolation of contacts of ill persons	Highly effective
Child care/daycare	Highly effective
Workplace / Community	Highly effective
Adult home care	Highly effective

## Protection against pandemic influenza

### Community interventions

- Isolation of those who are ill (Stay home if you are sick!!)
- Quarantine of close contacts who have been recently exposed

## Protection against pandemic influenza

### Community interventions

- Child social distancing
  - School, day care closures
- Adult social distancing
  - Workplace adjustments
  - Cancellation of public gathering

## HOW CAN YOU PREPARE?

**LEARN**  
**PREPARE**  
**ACT**

- What threats exist for your community
- What your city or community preparedness plan is
- What you need to do to help protect your family and community
- Stay updated
  - Identify sources you can count on for reliable information
  - Review reliable websites
    - Cleveland Department of Public Health (CDPH) - [www.clevelandhealth.org](http://www.clevelandhealth.org)
    - Centers for Disease Control and Prevention (CDC) - [www.cdc.gov](http://www.cdc.gov)



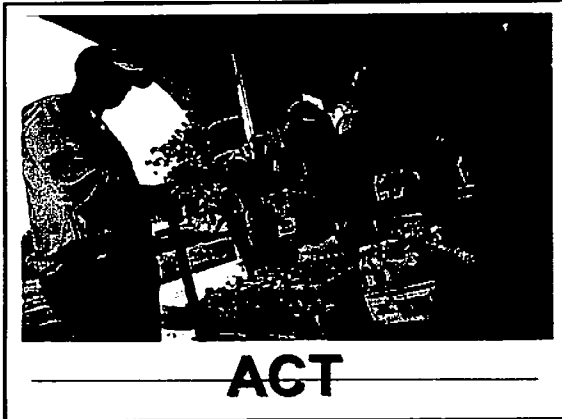
**PREPARE**

## PREPARE


- Attend training seminars in your community for emergency preparedness
- Develop a communication plan for your family
- Prepare a to-go kit of important resources for your family
  - Store nonperishable foods, bottled water, over-the-counter drugs, health supplies and other necessities (see your Emergency Preparedness Guide for list of supplies).
  - What accommodations/needs are there for pets
  - The U.S. Department of Health and Human Services recommends having a 2-week supply.

## PREPARE

- **Plan ahead**
  - If schools are closed
    - Consider childcare needs
  - If you or family member becomes sick and requires care:
    - Make plans for how to care for people with special needs in case the services they rely on are not available
    - Plan to stay home for at least 10 days when you are sick with flu. Staying home will keep you from infecting others.
  - If transportation networks are disrupted
    - Think about how you can rely less on public transportation
    - Consider carpooling



- Stay calm
- Follow instructions from public health
- Listen to information as to where to go and what to do
- Activate your plans
- Sign up to be an emergency preparedness volunteer



**Infection control issues**

- Use standard precautions
- The body is not "contagious" after death
  - Risk if using an aerosol producing procedure
- Visitation/funeral provide a venue for transmission
  - Family members/friends may have become infected before the patient died

**Working with people with Influenza Like Illness (ILI)**

- Maintain a distance of 6 feet or more
- Limit interactions with ill people
- Ask ill person to follow good cough etiquette or to wear a facemask
- Consider temporary reassignment for workers at increased risk of severe illness from influenza infection
- Workers may choose to wear a facemask or N95 respirator on a voluntary basis if close contact with people with ILI is unavoidable

\*Source: Centers for Disease Control and Prevention, www.cdc.gov, March Recommendations for Facemask and Respirator Use to Reduce Novel Influenza A (H1N1) Virus Transmission

**Respiratory precautions - masks**

**Masks / respirators**

- Masks for general use
- Respirators
  - Use during procedures producing aerosols
  - Employee with risk factors
  - OSHA requires fit testing if necessary for job
- Better to limit contact

**Business continuity**

- Delegate planning responsibility to one person and a backup – Pandemic Coordinator
- Form a team to assist
  - Include representatives from all departments
  - Include a labor/employee representative
- Meet regularly

## Questions

- Will an influenza pandemic increase or decrease the demand for your services?
  - What are your essential services?
  - What essential goods or services are provided by outside suppliers?
    - Talk with suppliers
    - Consider MOUs
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## Plan

- Identify essential services
  - Plan to provide essential services with a reduce work staff
  - Explore possible sources of additional staff (cross train employees, retirees, volunteers)
  - Examine communication issues
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## Pandemic influenza policies

- Institute a temporary liberal, non-punitive absenteeism policy
  - Instruct ill employees to stay home
  - Consider encouraging employees with recent household exposure to stay home
  - Provide for continuation of health care coverage and salary for employees unable to work
  - Identify trigger - presence of virus in county
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## Protecting employees at work

- Ensure availability of hand washing supplies, disposable tissues, regular cleaning of the workplace
  - Consider stockpiling masks, antiviral medicine
  - Adjust routines to allow for social distancing
    - Add distance between workers
    - Consider installing a cough shield at the reception desk
    - Limit trips into the community
  - Provide education for employees
    - Encourage personal preparedness
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## Recovery

- Identify trigger for end of local wave
  - Inform suppliers/consumers of return to normal operations
  - Offer emotional / psychological support for employees
  - Resume prior employee services and policies
  - Reevaluate and revise plan
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## Community Engagement Workshop

- Development of policies related to pandemic influenza, specifically related to faith based activities
  - Citizens' meeting was held in June
  - Stakeholders' meeting is July 21, 2009
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### Local contacts

- Cuyahoga County Board of Health
  - (216) 201-2000
- Cleveland Department of Public Health
  - (216) 664-3609
- Shaker Heights Health Department
  - (216) 491-1480
- American Red Cross – Cleveland Chapter
  - (216) 431-3010

Thank you

Don't forget to  
wash your hands!



# Know Your ABCs: A Quick Guide to Reportable Infectious Diseases in Ohio

from the Ohio Administrative Code Chapter 3701-3; Effective January 1, 2009

**Class A** *Diseases of major public health concern because of the severity of disease or potential for epidemic spread - report by telephone immediately upon recognition that a case, a suspected case, or a positive laboratory result exists*

Anthrax	Influenza A - novel virus	Rabies, human	Smallpox
Botulism, foodborne	Measles	Rubella (not congenital)	Tularemia
Cholera	Meningococcal disease	Severe acute respiratory syndrome (SARS)	Viral hemorrhagic fever (VHF)
Diphtheria	Plague		Yellow fever

Any unexpected pattern of cases, suspected cases, deaths or increased incidence of any other disease of major public health concern, because of the severity of disease or potential for epidemic spread, which may indicate a newly recognized infectious agent, outbreak, epidemic, related public health hazard or act of bioterrorism.

**Class B (1)** *Diseases of public health concern needing timely response because of potential for epidemic spread - report by the end of the next business day after the existence of a case, a suspected case, or a positive laboratory result is known*

Arboviral neuroinvasive and non-neuroinvasive disease: Eastern equine encephalitis virus disease LaCrosse virus disease (other California serogroup virus disease) Powassan virus disease St. Louis encephalitis virus disease West Nile virus infection Western equine encephalitis virus disease Other arthropod-borne disease	Chancroid Coccidioidomycosis Cyclosporiasis Dengue <i>E. coli</i> O157:H7 and other enterohemorrhagic ( <i>Shiga</i> toxin-producing) <i>E. coli</i> Granuloma inguinale <i>Haemophilus influenzae</i> (invasive disease) Hantavirus Hemolytic uremic syndrome (HUS) Hepatitis A	Hepatitis B, perinatal Influenza-associated pediatric mortality Legionnaires' disease Listeriosis Malaria Meningitis, aseptic (viral) Meningitis, bacterial Mumps Pertussis Poliomyelitis (including vaccine-associated cases) Psittacosis Q fever	Rubella (congenital) Salmonellosis Shigellosis <i>Staphylococcus aureus</i> , with resistance or intermediate resistance to vancomycin (VRSA, VISA) Syphilis Tetanus Tuberculosis, including multi-drug resistant tuberculosis (MDR-TB) Typhoid fever
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**Class B (2)** *Diseases of significant public health concern - report by the end of the work week after the existence of a case, a suspected case, or a positive laboratory result is known*

Amebiasis Botulism, infant Botulism, wound Brucellosis Campylobacteriosis Chlamydia infections (urethritis, epididymitis, cervicitis, pelvic inflammatory disease, neonatal conjunctivitis, pneumonia, and lymphogranuloma venereum (LGV)) Creutzfeldt-Jakob disease (CJD) Cryptosporidiosis	Cytomegalovirus (CMV) (congenital) Ehrlichiosis/Anaplasmosis Giardiasis Gonococcal infections (urethritis, cervicitis, pelvic inflammatory disease, pharyngitis, arthritis, endocarditis, meningitis, and neonatal conjunctivitis) Hepatitis B, non-perinatal Hepatitis C Hepatitis D (delta hepatitis)	Hepatitis E Herpes (congenital) Influenza-associated hospitalization Leprosy (Hansen disease) Leptospirosis Lyme disease Mycobacterial disease, other than tuberculosis (MOTT) Rocky Mountain spotted fever (RMSF) Streptococcal disease, group A, invasive (IGAS)	Streptococcal disease, group B, in newborn Streptococcal toxic shock syndrome (STSS) <i>Streptococcus pneumoniae</i> , invasive disease (ISP) Toxic shock syndrome (TSS) Trichinosis Typhus fever Varicella Vibriosis Yersiniosis
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**Class C** *Report an outbreak, unusual incidence, or epidemic (e.g., histoplasmosis, pediculosis, scabies, staphylococcal infections) by the end of the next business day*

**Outbreaks:**

- Community
- Foodborne
- Healthcare-associated
- Institutional
- Waterborne
- Zoonotic



NOTE: Cases of AIDS (acquired immune deficiency syndrome), AIDS-related conditions, HIV (human immunodeficiency virus) infection, perinatal exposure to HIV, and CD4 T-lymphocytes counts <200 or 14% must be reported on forms and in a manner prescribed by the Director.