

Public Health Emergency Preparedness

Cyber Security 2008

May 8, 2008

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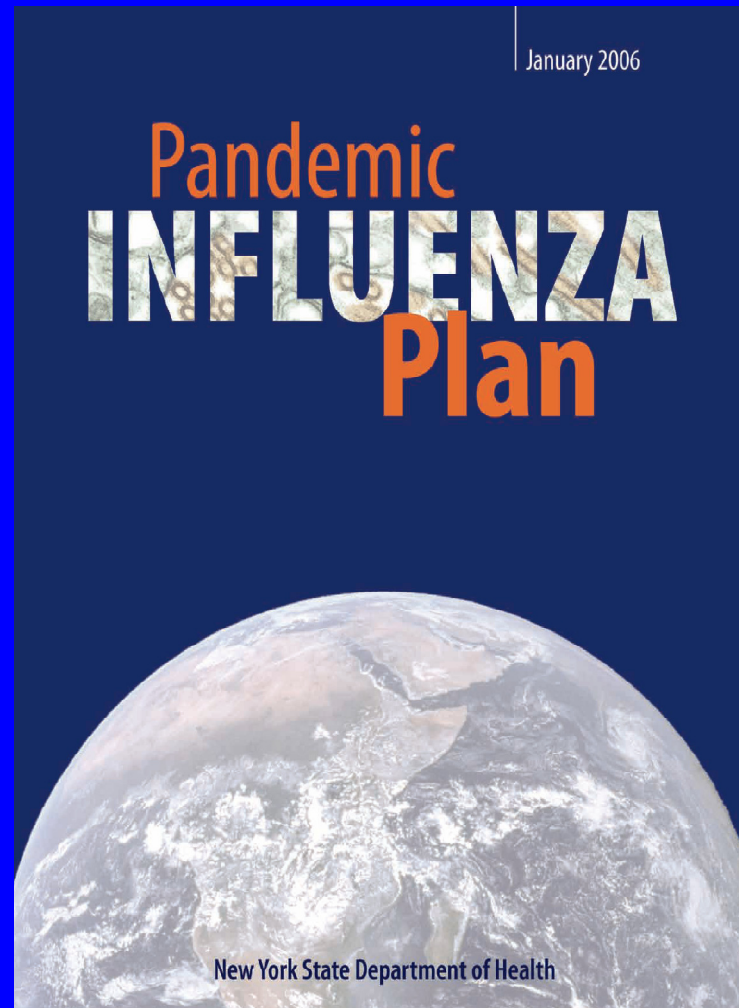
Commissioner

Erie County Department of Health

CBRNE and All Other Public Health Threats

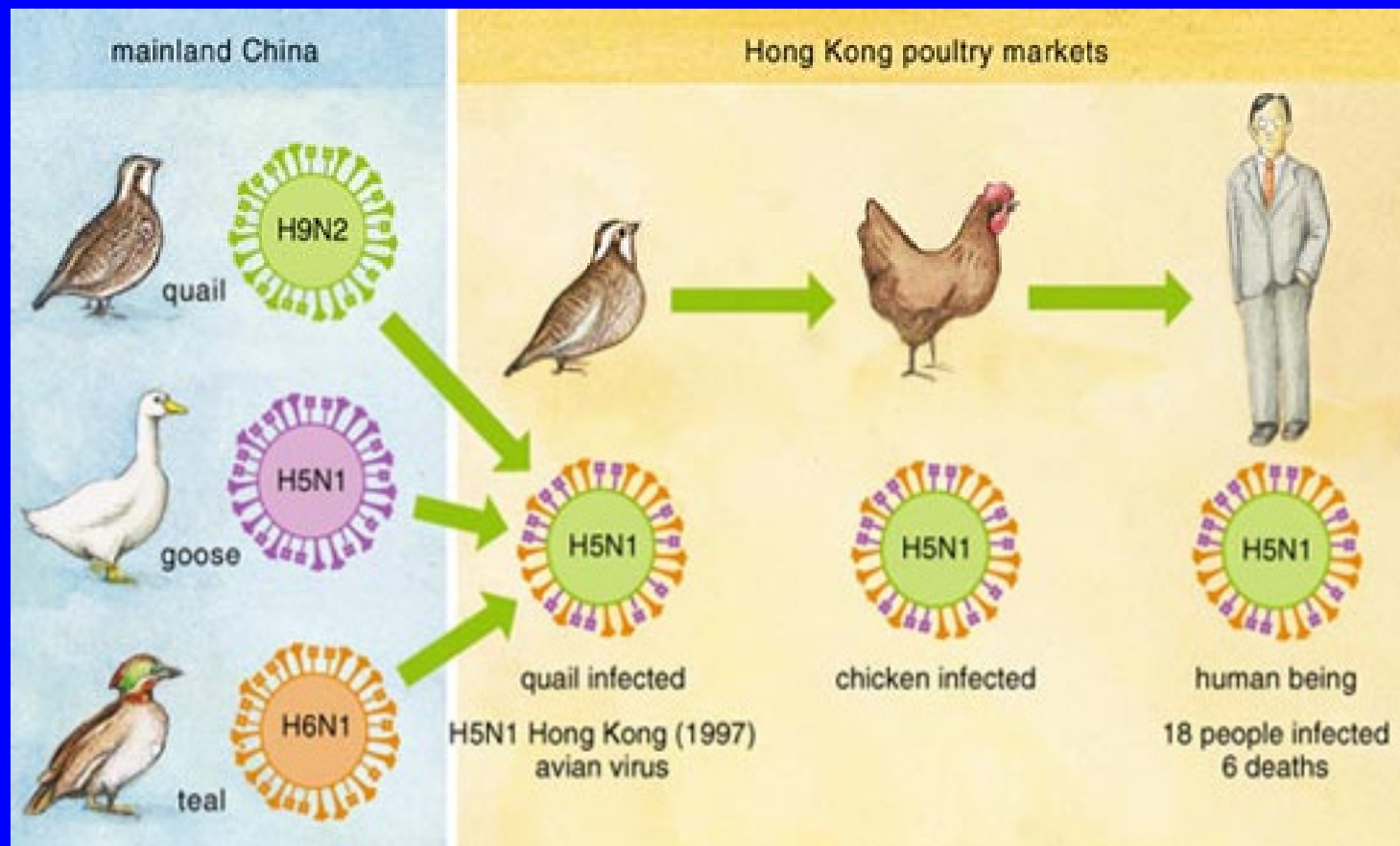
- CBRNE and more “traditional” disasters (floods, snowstorms, earthquakes)
- Natural/Manmade
- Escalating/Deescalating
- Macroscopic/microscopic

WORLD, US, NYS, & ERIE COUNTY PREPARATION



Avian Influenza (Bird Flu)

1997- first human illness detected in Hong Kong



Human Infection

- No natural immunity
- Severe morbidity
- High mortality
 - 1918 flu pandemic- 2-3% Mortality
 - HP Avian Influenza H5N1- up to 50% mortality in humans
 - 86% mortality in hospitalized cases

Mode of Transmission

- Droplet
- Aerosolization
- Direct contact with contaminated tissue, feces, and respiratory secretions
- Direct inoculation of oral and/or nasal mucosa



Incubation

- Two to eight days
- Upper limits 8 to 17 days

Clinical Course

- Influenza Like Illness (ILI) - fever, sore throat, headache, cough, myalgia, malaise
- Viral pneumonia (diffuse multi-focal infiltrates)
- Acute respiratory distress syndrome (ARDS)
- Multi-organ failure

Pandemic

- Three criteria must be met
 - New influenza subtype infects humans with little or no immunity
 - Highly infective, causing serious illness and death
 - Efficient and sustained human-to-human transmission

WHO

Principal Strategies



- To counter pandemic influenza:
 - Interrupt the transmission of disease among species (e.g., avian, human)
 - Develop and produce a vaccine
 - Stockpile the antiviral drugs

Pandemic Flu Planning Assumptions

- Expected, but arrives quickly
- Prolonged/recurrent – 2 or 3 waves lasting 5 to 10 weeks
- High attack rates because of widespread susceptibility
- Limited/delayed vaccine & antiviral medications
- Altered standards of care (health care rationing)

Implications for Humans

- Pandemic could cause > 2.0-7.4 million deaths worldwide (WHO estimate)
- Impact health and social services
- Interrupt essential services
- Economic loss
- Social disruption
- Panic and suffering

World is getting smaller



Threat of Disease in Erie County

	Moderate (1958/68 – like)	Severe (1918 – like)
Illness	270,000 (30%)	270,000 (30%)
Outpatient care	135,000 (50%)	135,000 (50%)
Worried well	?	?
Hospitalization	2,700	29,700
ICU care	402	4,455
Ventilators	203	2,236
Deaths	627	5,709

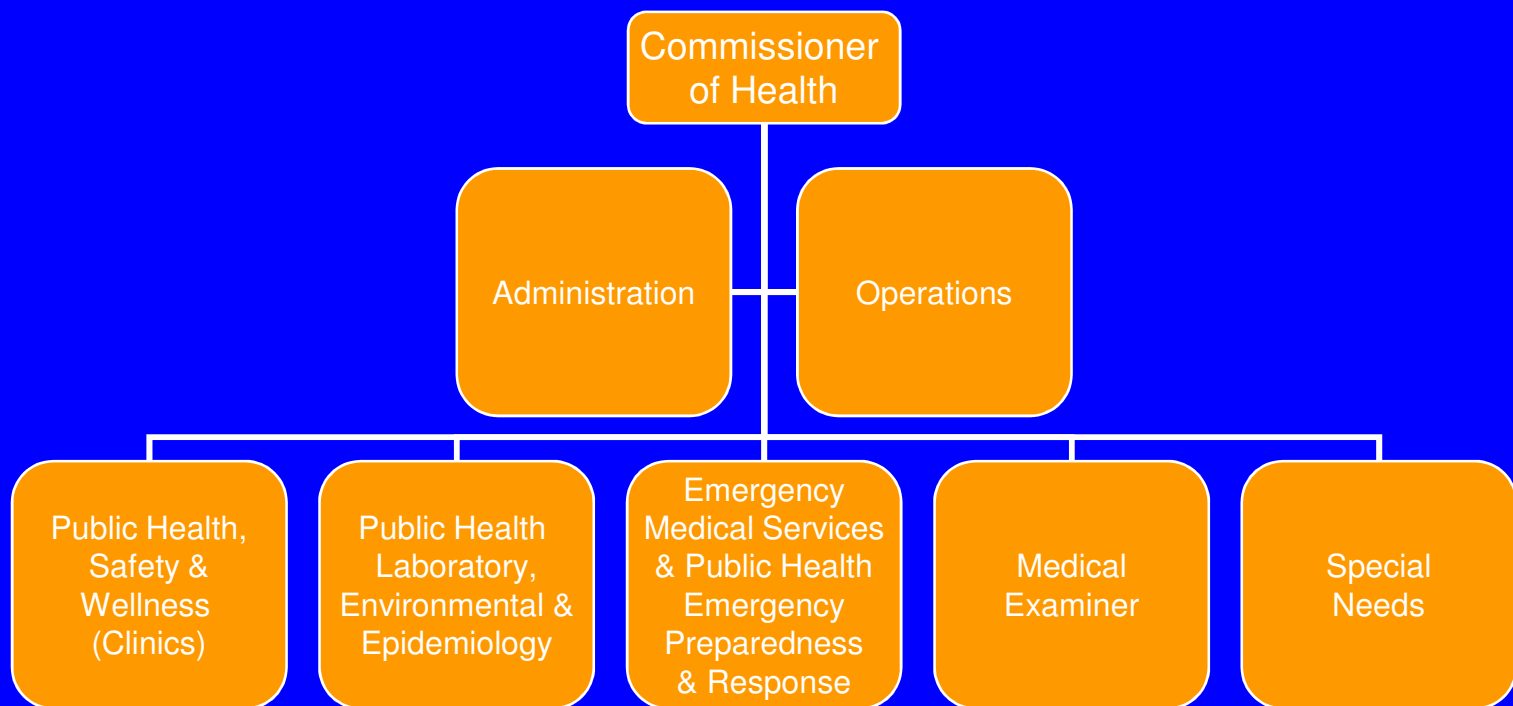
Public Health Emergency Preparedness (PHEP)

- Post 9/11 public health joined the first response community (police, fire, EMS)
- Public health surge
 - Use of day to day public health tools only quicker, stronger, bigger, faster, larger, etc.
 - Exceptional actions only in most severe situations

Pandemic Flu Planning Assumptions

- Health & public health overwhelmed
 - Health care providers higher exposure risk
 - Significant absenteeism
 - Many worried well
- Other critical infrastructure worker shortages
- Potential social disruption
 - Potential high mortality
 - Not typical de-escalating event and can't see, hear, know threat is gone

Erie County Department of Health



PHEP Activities

- Policy
- Risk communication/public health education
- Surveillance, epidemiology, & case finding
- Laboratory analysis
- Disease control including quarantine, isolation, & other social restrictions
- Workforce recruitment, protection, training, & education
- Equipment & supplies
- Mass vaccination & prophylaxis
- Mental health
- Mass care
- Mass fatality

Policy

- Scientific, practical, legal, ethical, financial, political implications
- Best when widely discussed with citizenry pre event
- Ideally, common policy across jurisdictions
- Do the most good, for the most people
 - Military or disaster approach
 - Rationing may not be acceptable to Americans

*WNYPHA public health priority guidelines
for the preservation of society in the face of
a significant public health emergency*

Therefore, be it resolved that the Western New York Public Health Alliance, Inc hereby unanimously adopts the following prioritization for limited or adequate healthcare resource deployment to be invoked only in the face of a significant threat to society:

*WNYPHA public health priority guidelines
for the preservation of society in the face of
a significant public health emergency*

1. Acts to preserve and maintain critical societal infrastructure
2. Acts to contain the threat including control of the spread of a disease
3. Acts to minimize individual mortality (death)
4. Acts to minimize individual morbidity (disability)

Risk Communication/Public Health Education

- Change behavior
- Should begin pre-event, but difficult to get public's attention
- Putting things into perspective
 - Layperson's perception of disease prevalence is by number of times they see it in the media
- Measures to reduce disease transmission
 - Frequent hand washing
 - Respiratory etiquette
- Stockpile non-perishable food, medicines, etc.

An illustration of two hands being washed, with numerous light blue soap bubbles floating around them. The background is a gradient of blue, transitioning from a darker shade at the top to a lighter shade at the bottom. The text is positioned on the left side of the image.

YOUR HEALTH IS IN YOUR HANDS

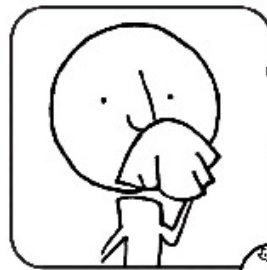
HELP STOP THE SPREAD OF GERMS
That Cause Colds, Flu, and Other
Respiratory Diseases.

Always WASH YOUR HANDS WITH SOAP
AND HOT WATER. Or USE A WATERLESS
HAND CLEANSER After:

- Blowing your nose or coughing
- Using the bathroom
- Before and after eating
- After being in contact with or being near someone who is ill

Stop the spread of germs that make you and others sick!

Cover your Cough



Cover your mouth and nose with a tissue when you cough or sneeze or cough or sneeze into your upper sleeve, not your hands.

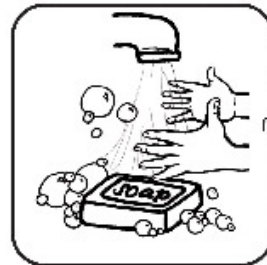


Put your used tissue in the waste basket.



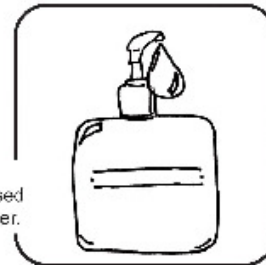
Clean your Hands

after coughing or sneezing



Wash hands with soap and warm water for 20 seconds

or
clean with
alcohol-based
hand cleaner.



Minnesota Department of Health
11100 Oakdale Avenue
Minneapolis, MN 55455
612-296-6000
www.mn.gov



How you can learn more.

For updates on the H5N1 bird flu, go to www.avianflu.gov and other web resources listed on the back of this brochure.

Remember:

- The H5N1 virus that is spreading in Asia, Europe and Africa is not yet in the United States or the Western Hemisphere.
- Following proper health and safety measures can reduce the risk of catching diseases carried by birds.
- Bird flu currently does not easily infect people.
- Scientists are watching H5N1 very closely for any changes that may affect people and birds.

Government agencies are working to safeguard our health through many activities. Our federal government has a new early detection program for the H5N1 virus in wild birds. Officials are testing, monitoring and sampling birds in key locations.

The risk of the H5N1 virus arriving in New York is also reduced by federal laws restricting bird imports and by regular monitoring by the New York State Department of Agriculture and Markets (NYSDAM). This agency checks for avian influenza in live poultry markets and commercial and backyard poultry farms.

Web Resources

New York State Department of Health
<http://www.nyhealth.gov>

New York State Department of Agriculture and Markets
<http://www.agmkt.state.ny.us>

New York State Department of Environmental Conservation
<http://www.dec.state.ny.us>

Department of Health and Human Services
<http://www.avianflu.gov>

Centers for Disease Control bird flu page
<http://www.cdc.gov/flu/avian>

World Organization updates and further links
http://www.who.int/csr/disease/avian_influenza/updates/en/index.html



H5N1 Avian Influenza



State of New York
George E. Pataki, Governor
Department of Health
Antonia C. Novello, M.D., M.P.H., Dr.P.H., Commissioner



DON'T SPREAD IT AROUND!

HELP STOP THE SPREAD OF GERMS THAT CAN
CAUSE COLDS, THE FLU, AND EVEN SARS!

When you go to a doctor or hospital, always notify
the reception area immediately if you have any
flu-like symptoms (cough, fever, difficulty breathing,
and/or muscle aches).

- Cover your nose and mouth with a tissue
whenever you cough or sneeze.
- Dispose of used tissues in the trash.
- Wash your hands with soap and hot water,
or use a waterless hand cleanser.

If you get a respiratory infection, your doctor might suggest you
wear a surgical mask to cover your mouth and nose, and keep
germs from spreading.



Surveillance, Epidemiology, & Case Finding

- Syndromic surveillance
 - Sentinel practices and clinics
 - Emergency departments
 - Pharmaceutical sales
 - Sewage flow rates
 - Veterinary
- Report suspect ILI cases (temp $> 38^{\circ}$ plus sore throat, cough, or dyspnea) to local health department (LHD)
- Epidemiology resources shift to more global epidemiology such as geographic distribution, investigating morbidity, & mortality

Criteria for Human Testing

- Testing for influenza A(H5N1) should be considered on a case-by-case basis in **consultation with state and local health departments** for **hospitalized or ambulatory** patients with:
- documented temperature of $>38^{\circ}\text{C}$ ($>100.4^{\circ}\text{F}$), **AND**

Indications for Testing

- Testing for influenza A (H5N1) is indicated for **hospitalized** patients with:
- radiographically confirmed pneumonia, acute respiratory distress syndrome (ARDS), or other severe respiratory illness for which an **alternate diagnosis** has **not** been established, **AND**

Criteria for Testing

- one or more of the following: cough, sore throat, shortness of breath, **AND**
- history of contact with domestic poultry (e.g., visited a poultry farm, household raising poultry, or bird market) or a known or suspected human case of influenza A(H5N1) in an H5N1-affected country within 10 days of symptom onset.

Laboratory Analysis

- Highly pathogenic avian influenza A(H5N1) is classified as a select agent and must be worked with under Biosafety Level (BSL) 3+ laboratory conditions
- Laboratory Response Network (LRN)
 - BioSafety Level (BSL 3)
 - NYS DOH Wadsworth & Erie County DOH
- RT- PCR testing & possibly cell culture
- Specimen collection and analysis
- Pandemic phase
 - Capacity and role for laboratory testing probably less
 - Testing severe cases and antiviral failures for resistance

Disease Control Including Quarantine, Isolation, & Other Social Restrictions

- Quarantine and Isolation
- Least restrictive means
- Right to be heard
- Logistical and tracking challenges
- Other social restrictions
 - Curfews
 - Cancellation of mass gatherings such as sporting events, movies, public meetings, concerts, religious ceremonies, funerals, school

Duration Of Isolation

- Continue isolation precautions for 14 days after onset of symptoms until an alternative diagnosis is established or until diagnostic test results indicate that the patient is not infected with influenza A virus

Prevent Ill Persons from Infecting Others

- “...under its delegated authority, the CDC is empowered to detain, medically examine, or conditionally release individuals reasonably believed to be carrying a communicable disease”
- Feds generally defer to local and state authorities

Infection Control

- Standard & droplet precautions
 - Surgical mask for patient
 - Spatial separation 3 ft
 - Private room/cohort
 - Airborne Infection Isolation Room (AIIR)
 - Patient movement only for essential services
 - Duration of illness & minimum 5 days from symptom onset
- Airborne precautions
 - Gloves, gowns, face/eye protection, N95 or other appropriate particulate respirator
 - Aerosol generating procedures (intubation/extubation, suctioning, nebulizer treatment, bronchoscopy)
- Contact precautions for diarrhea

Workforce Recruitment, Protection, Training, & Education

- Paid & volunteer workforce
- Cross train staff in advance
- PPE
- Staff not to report to work if ill - unless really needed
- Assign recovered staff to care for infected patients



Workforce Recruitment, Protection, Training, & Education

- Potential issues
 - Out of title work assignments
 - Altered work sites and hours
 - Outsourcing
 - Absenteeism
 - Worker's compensation
- Doctors & nurses vs. alternate health care providers
 - Dentists
 - Podiatrists
 - Pharmacists
 - Nurses
 - Chiropractors
 - National Ski Patrol

Equipment & Supplies



- SNS, VMI, MERC, local caches
- ChemPack
- Ventilators
- Coordinated by county Emergency Operations Centers (EOC)

Mass Prophylaxis and Vaccination



SMALLPOX OUTBREAK NYC 1947

- Points of Dispensing (PODs) & HPODs
 - Pills within 2 days
 - Shots within 5 days
- Documentation
- Series of shots
- Monitor adverse reactions
- Hard to reach populations
- Who goes first, who goes last?

Potential Erie County Scenario

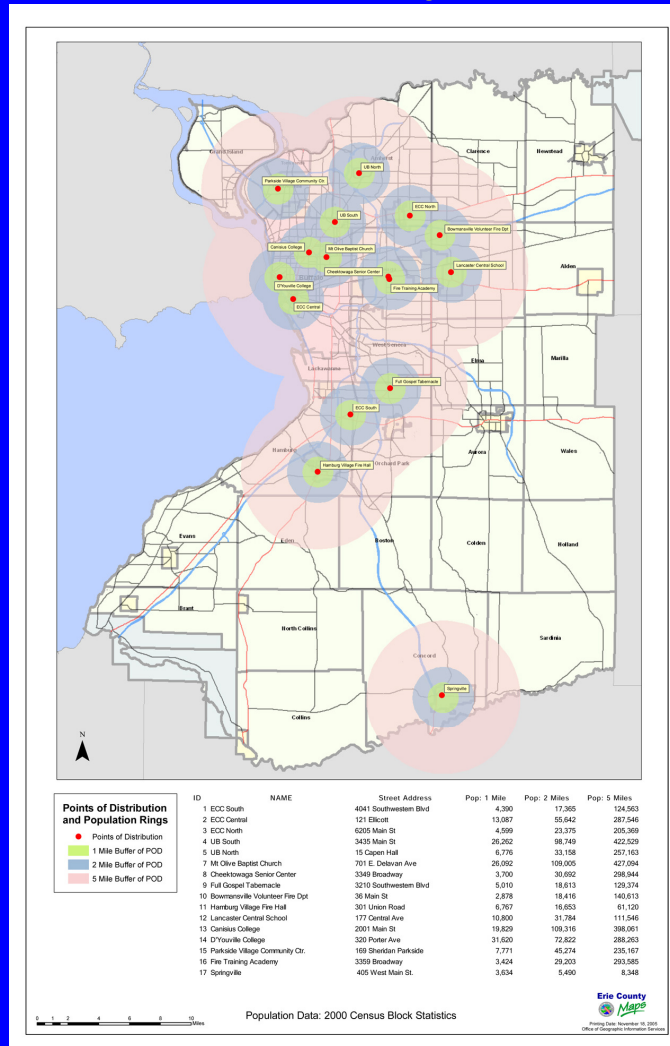
- 950,000 vaccinated
- 5 days
- 15 PODS
- 24 hours/day
- 3 shifts/day
- 6,865 staff/shift (plus security)



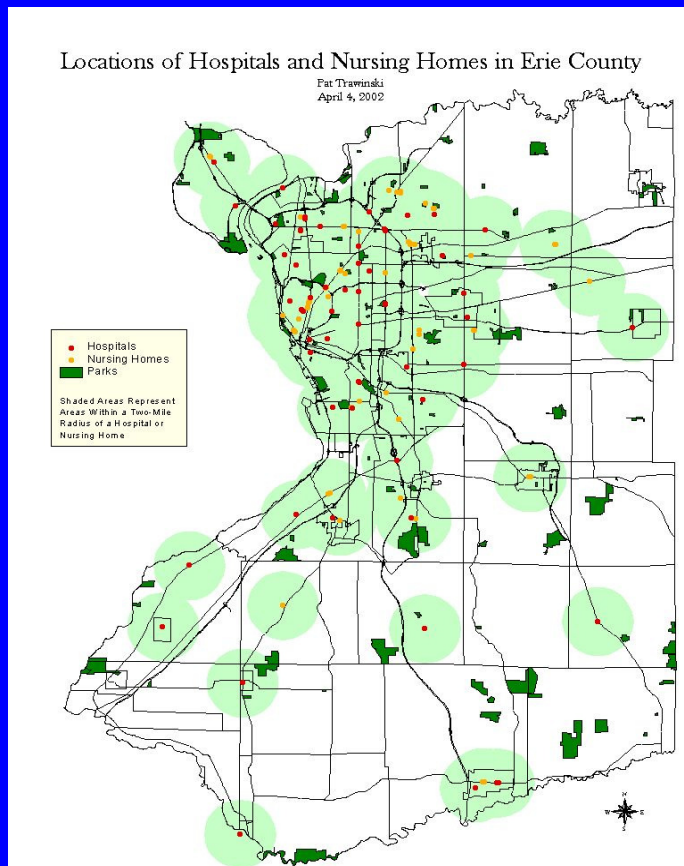
Antivirals

- Treatment
 - Ideally within 48 hours of symptom onset
 - 5 days, bid, 10 pills
- Prophylaxis
 - Qd, 40 pills
 - Supplies may not be adequate
 - Monitor side effects
 - Potential development of resistance
 - Probably only practical early on

Erie County PODs



Mass Care



- Hospitals, nursing homes, home care agencies, doctors, emergency medical services
- Families
- Surge capacity
- Diversion
- Alternate care sites & standards
 - Grant



Mental Health

- Emotions may include guilt, grief, stress, exhaustion, anger, & fear
- Public
 - Including worried well
- Providers & responders
 - Alliances with faith-based, CBOs, & NGOs with expertise
 - Family and personal concerns may impact ability to perform job
- May be especially critical in:
 - Prolonged events
 - Large number of casualties
 - Youth casualties
 - Biological event that can't be seen, heard, or measured

Mass Fatality

- Infectious bodies
- Refrigeration capacity
- Body bags
- Body disposal
- Funerals

Implications for Businesses, Agencies, & Institutions

- A pandemic could last many months with several waves
- Widespread impact
- Duration unpredictable
- Primary effect is on staffing levels
- Supplier/contractor issues
- COOP

Implications for Businesses, Agencies, & Institutions

- Human Resource Issues
 - Identify essential services and staff
 - Employer responsibility for health and safety of workers
 - Plan for business/workplace closure
 - Short-term planning (health focus)
 - Succession planning
 - Identify workplace health and safety manager

Health and Safety Manager Considerations

- Establish a system to monitor employee illness
- Establish absence and return to work policies
- Ensure workplace is supplied with PPE, tissues, masks, personal hygiene & cleaning products

Implementing Public Health Strategies in the Workplace Setting

- Educate employees (fact sheets, notices, policies...)
- Inform employees of differences in symptoms between influenza and the common cold
- Ensure communications plan is in place
- Restrict workplace entry of people with influenza symptoms

Implementing Public Health Strategies in the Workplace Setting

- Encourage personal hygiene and cleaning
- Increase social distancing
- Implement protective barriers
- Consider policies to encourage the ill to stay at home
- Consider travel restriction policies
- Activate contact tracking of employees

Summary

- Effective planning and response to pandemic influenza is dependent on a well-coordinated multi-strategy, multi-disciplinary effort between local, regional, state, federal, international governmental and business partners

Questions?



Intermediate host may serve as mixing vessel

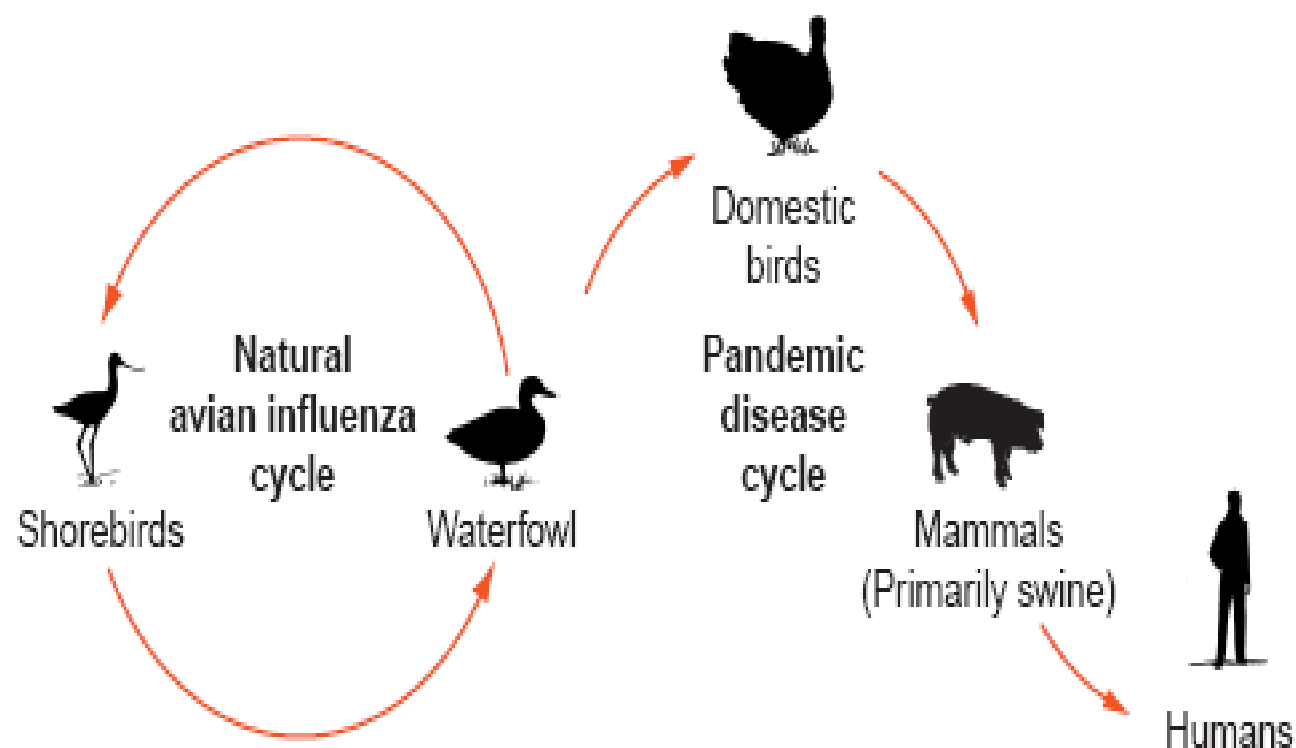


Figure 22.4 Global cycle of avian influenza viruses in animals.