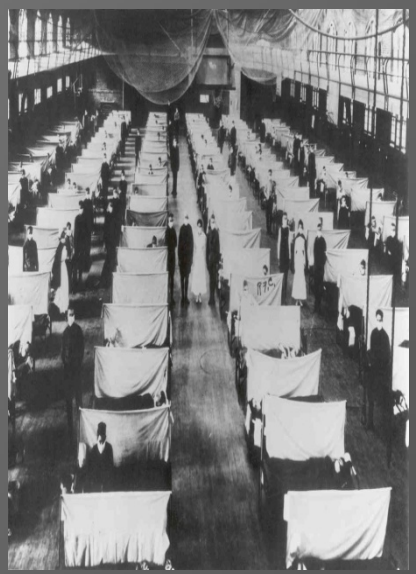
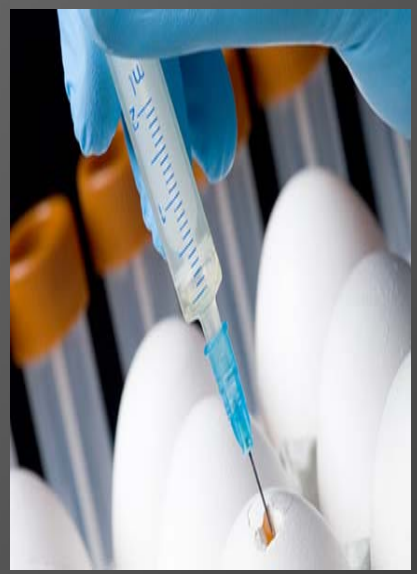
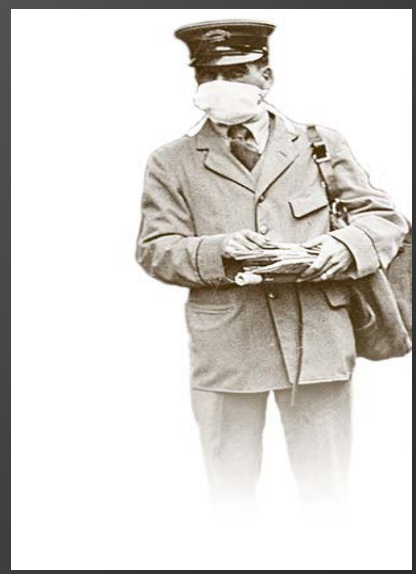
PLAGUES ARE A "TEAM SPORT"- PUBLIC HEALTH AND EMERGENCY MEDICAL SERVICES COLLABORATION IN PANDEMIC PLANNING AND RESPONSE







Raphael M. Barishansky

Objectives

- Understanding the relationship between EMS and Public Health
- Relevant definitions
- Pandemic history
- Seasonal vs. Pandemic Flu
- Public Health and EMS Threats
- Planning Realities
- Collaboration Opportunities
- Concluding thoughts

Opening quote

"Pandemic influenza is the most important threat that we are facing right now."

- Julie Gerberding, CDC Director, 2005

Opening quote

"*Localities should be prepared to rely on their own resources to respond.*"

- Draft US pandemic influenza plan, 2005

Who we are

- Public Health and Emergency Medical Services

Public Health Services

- Monitor health status
- Diagnose and investigate
- Inform and educate
- Mobilize community partnerships
- Develop policies and plans
- Enforce laws and regulations
- Assure the provision of health care
- Assure competent health care workforce.
- Evaluate effectiveness of health services.
  - *Research Source: CDC*

Emergency Medical Services

- Prevention
- Medical Direction
- Human Resources
- Education Systems
- Communications Systems
- Information Systems
- Clinical Care
- Public Education
- Emergency Preparedness

- *Source: NHTSA*

Collaboration

- Public Health
  - Assure provision of health care
  - Competent workforce
  - Inform and Educate
  - Monitor Health Status
- EMS
  - Clinical Care
  - Emergency Preparedness
  - Medical Direction
  - Public Education
  - Information Systems
  - Communication Systems

Why are you here ?

- You tell me
- “All Disasters are Local”
- Local planning and collaboration are essential to successful disaster response

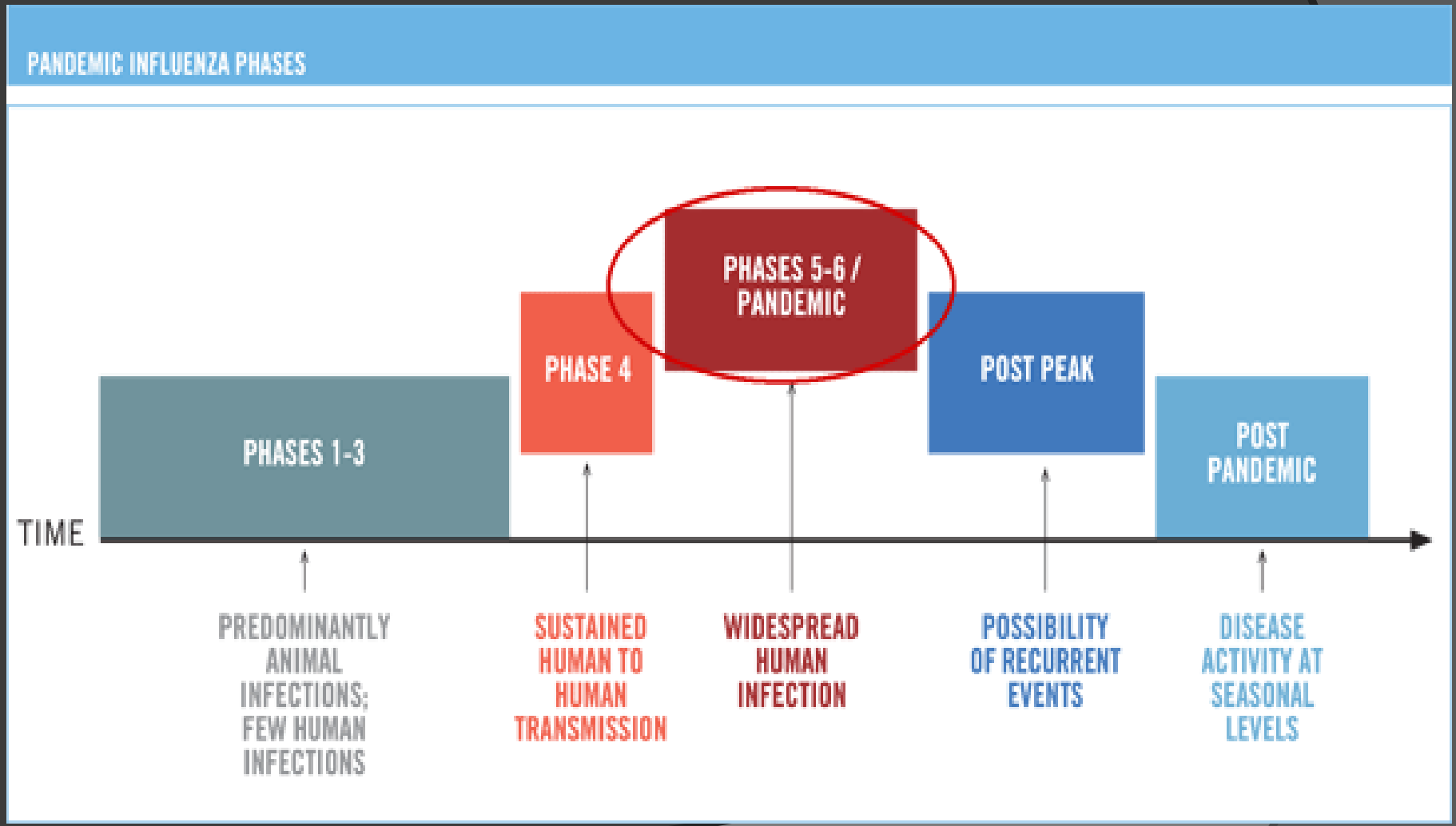
Relevant Definitions

- Definitions:
  - Endemic - an infection is said to be endemic in a population when that infection is maintained in the population without the need for external inputs
  - Epidemic - The occurrence of cases of an illness in a community or region which is in excess of the number of cases normally expected for that disease in that area at that time.
  - Pandemic - An epidemic that strikes a very wide area, usually hemisphere-wide or world-wide.

CDC Definition of Pandemic

- Global outbreak with:
  - Novel virus, most humans susceptible
  - Person to person transmission
  - Wide geographic spread

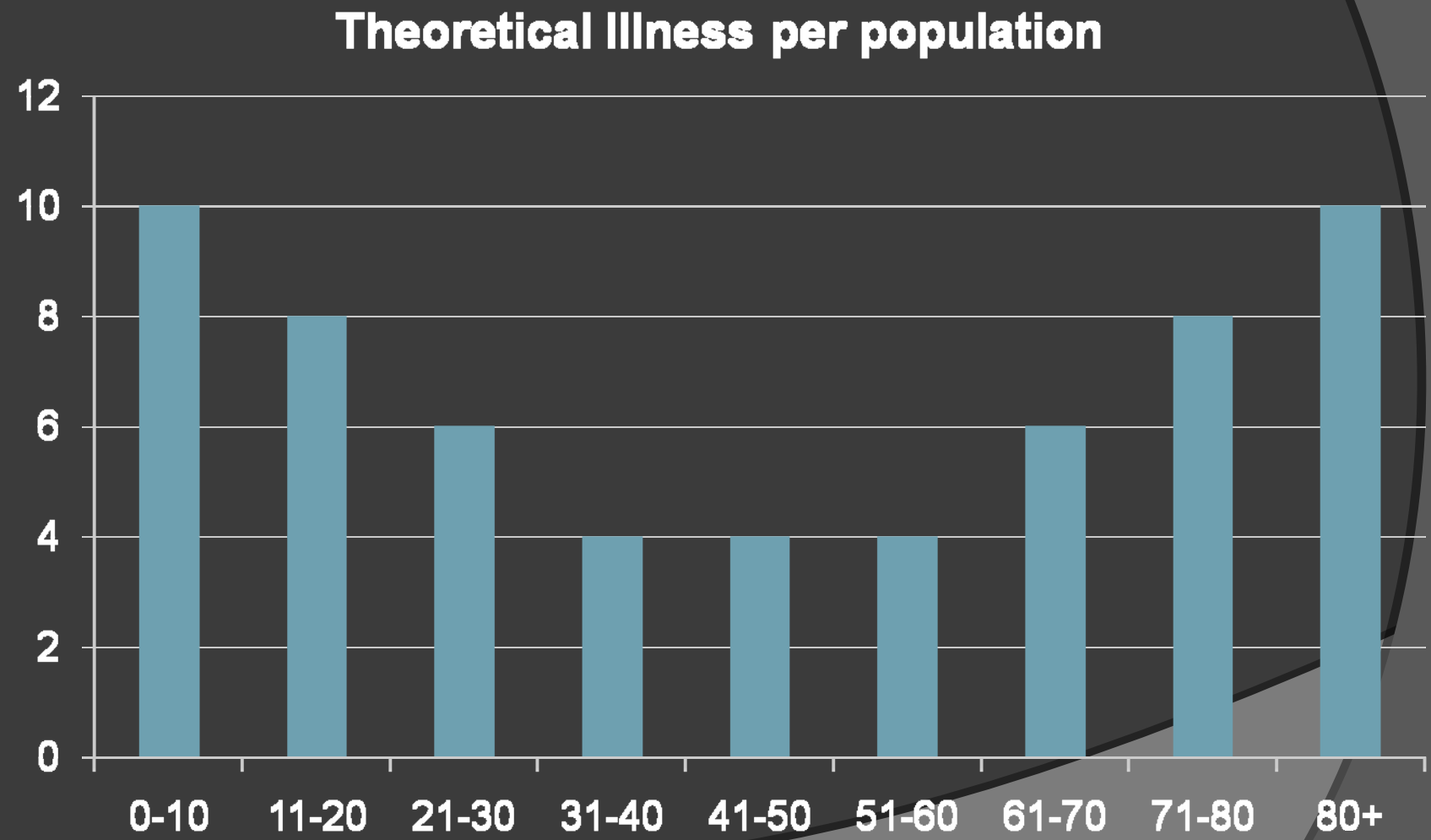
WHO Influenza Phases



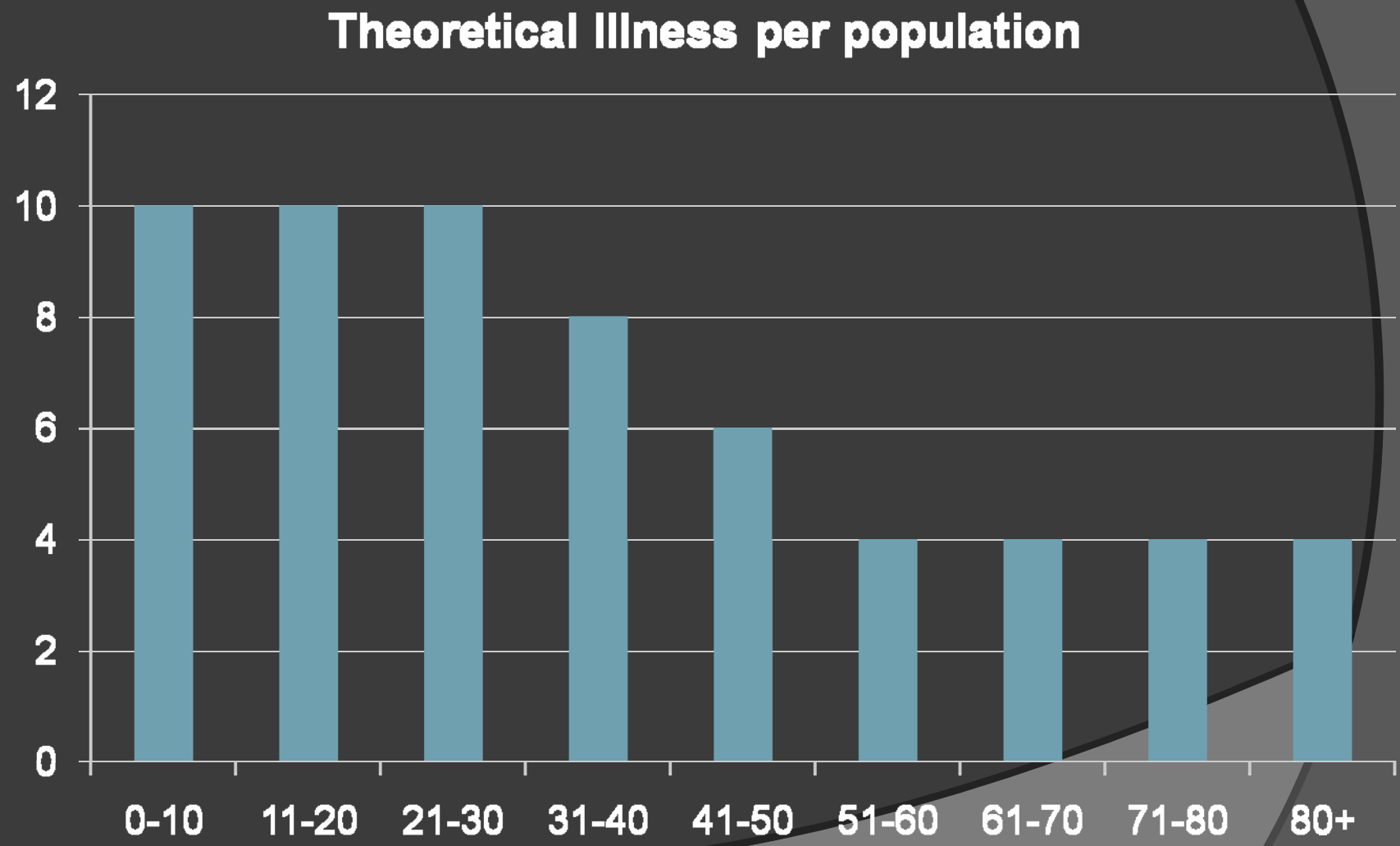
Seasonal vs. Pandemic Flu

- Seasonal Influenza
  - Peaks usually December thru March in North America
  - 36,000 deaths/200,000 hospitalizations annually
  - Frail, elderly and very young – U shaped distribution
- Pandemic Influenza
  - Rapid, global spread among humans
  - No seasonal preference - total duration could be a year or more
  - Comes in waves
  - Distribution will vary
  - Millions of sick and/or deaths

Seasonal Flu Chart



H1N1 Flu Chart



Pandemics in the United States

- In 1918, the “Spanish flu” killed tens of millions of people worldwide and about 675,000 died in the United States.
- In 1957, the “Asian flu” killed about 2 million people worldwide and about 70,000 in the United States.
- In 1968, the “Hong Kong” flu killed about 700,000 people worldwide and about 34,000 in the United States

- *National Library of Medicine, 2009*

Pandemics in the United States

- Each of these pandemics was caused by emergence of a new virus that contained components of previous human influenza viruses and avian influenza viruses.

Pandemics in the Unites States

- In 2009-2010, H1N1 “Swine Flu” outbreak of Influenza-like illness (ILI) occurred in Mexico and the USA - the CDC reported seven cases of novel A/H1N1 influenza
- By March, 2010 213 countries and overseas territories/communities have reported laboratory confirmed cases of pandemic influenza H1N1 2009, including at least 16,931 deaths (as per the WHO).

Extrapolating 1918 to 2008

	1918 Experience	Today (based on U.S. pop.)
Attack Rate	30%	90 million
Outpatient Care	50% of ill	45 million
Hospitalized	3%	9.9 million
ICU Care	n/a	1.485 million
On ventilator	n/a	745,500
Deaths	1%	1.903 million

Source: www.PandemicFlu.gov

Influenza impact

- Attack rate - 25%-50%
- Sickness rate - 4%-12%
  - Normal flu is 5-10%
- Absenteeism
  - 25%-35% for 5-8 days over a 3 month period
- Difficult to impossible to travel
- Disruptions and shortages of fuel, food stuffs, health care

Influenza as a Public Health Threat

- Influenza Viruses are the respiratory viruses of greatest public health importance, particularly Influenza A

Influenza as a Public Health Threat

Why is Influenza A such a public health threat?

- Antigenic drift (variation within the HN sub type) or antigenic shift (variation between different HN sub-types) makes large portion of the population immunologically naïve on a regular basis
- Influenza epidemics can be characterized as inter-pandemic or pandemic

Influenza as a Public Health Threat

- Annual average US winter seasonal epidemics affect 5% to 20% of the population
- At one time, it was thought that new HN variants were due to re-assortment of genetic material from an avian strain and a human strain in a third animal, like a pig. Modern evidence suggests that humans may act as this mixing vessel

Influenza as an EMS System Threat

- System Demand
  - Based on CDC estimates, EMS volume could increase as much as 300% during a peak in a pandemic
  - Wide spread demand could negate:
    - Mutual aid
    - Regional Response
    - State/Federal Response
  - Receiving facilities may not be able to accept or turn around EMS units

Influenza as an EMS System Threat

- Unit Production
  - Sickness among EMS staff decreases available units
  - Volunteer staffing, if an option, may not be able to fill the gaps

Pandemic Influenza Planning

- An influenza pandemic will be unlike other public health emergencies or common disasters.
  - Inevitable
  - Likely to see locally explosive epidemics
  - Widespread, not focused like a bio-terrorism event
  - Will put an extraordinary strain on human and material resources
  - Effect will be relatively prolonged – weeks to months

Planning Assumptions

- Significant Impact
  - Healthcare
    - Hospitals
    - Medical Suppliers
    - Healthcare providers
  - Essential Services
    - Police, Fire, Sanitation, Mortuary Services
  - Infrastructure
    - Electricity, Water, Sewer, Telecommunication

Pandemic Influenza Planning

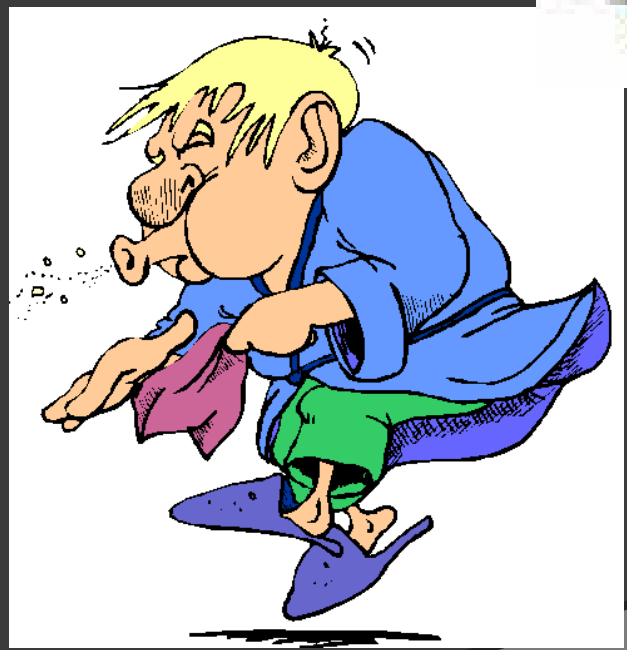
- United States Department of Health and Human Services outlines:
  - Isolation
  - Quarantine
  - ID and sample First outbreak
  - Provide quantities of Supplies from the Strategic National Stockpile
- Rapid Development of Vaccine
- Increase Antiviral Medications
- Increase Antibiotic Medications

Definitions: Isolation vs. Quarantine

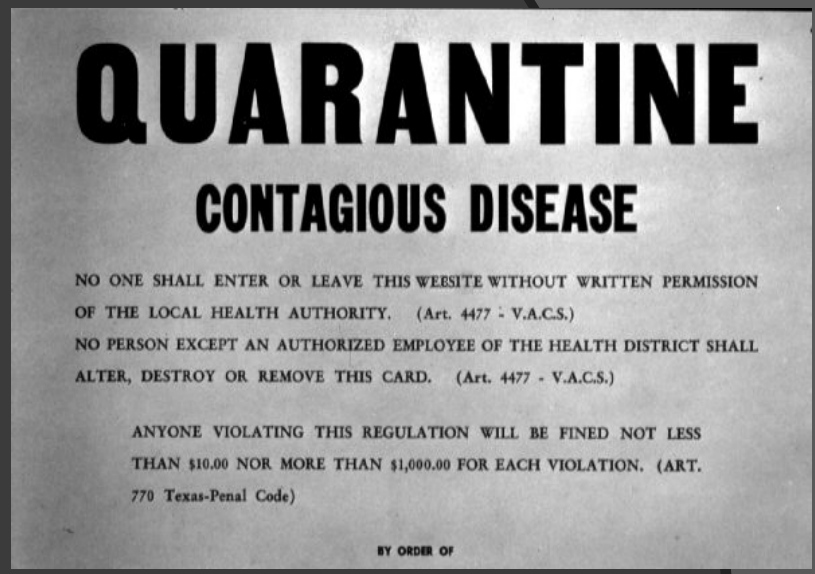
- What is the difference
  - Isolation sequesters the already ill
  - Quarantine prevents those that are exposed from spreading disease prior to onset of symptoms

Isolation

- Isolate those that are sick
  - Hospital
  - Home
  - Other location



Quarantine



- Airport - Close
- Railways - Close
- Highways -?
- Common problems associated with Quarantine
  - Food Supplies
  - Essential Materiel & Equipment
  - Medical Supplies

Influenza take-homes

- Prepare
- Ultimately a Local Issue
- Do Not Over React
  - Not everyone is going to die
- Take precautions

Goal of Public Health

- Slow down spread/lessen overall impact
- Isolation of the sick
- Quarantine of the exposed
- Protective sequestration
  - Isolating a community before illness enters

Goal of Public Health

- Social Distancing
  - Actions taken to discourage close social contact between individuals
- Public education
  - Accurate, clear communication
  - Consistent with those being given by other public health authorities

Public Health Role

- To identify and establish contacts in the local health care community including hospitals, local health departments, emergency response personnel.
- To provide sound medical and public health information to the incident commander, key decision makers and the general populace.

Defining Public Health Surveillance

- Surveillance is defined as the "*ongoing, systematic collection, analysis, and interpretation of health-related data essential to the planning, implementation, and evaluation of public health practice*" with the timely dissemination of these data to those responsible for prevention and control.

Understanding Public Health Surveillance

Disease surveillance provides information such as:

- Disease incidence, morbidity, and mortality, and progress in achieving disease control goals
- Changes in patterns of morbidity and mortality among different age groups in different demographical areas and among different economic, social, or cultural groups
- Impact of immunization strategies on disease incidence
- Disease trends

Various types of surveillance

- Sentinel surveillance
- Laboratory Surveillance
- Syndrommic surveillance

EMS “down and dirty” surveillance

- Your CAD system should be able to monitor types of incident by chief complaint
- Your EMS agency/system should have the ability to monitor work force illness rates/patterns

Don’t forget

- ***Special populations –***
- Planning and response must take into account the special circumstances of any number of select diverse groups:
  - Elderly
  - Homebound Individuals
  - Disabled Persons
  - Single Parents
  - People with Chronic Illnesses
  - Others

Always

- With all members of the public – but especially our special populations– clear, concise communication is key
- People need to know what you are doing and how you are doing it

Special needs – in a group setting

- Issues to consider:
  - Education of staff
  - Masks
  - Anti-virals

Special needs

- Linking with emergency agencies:
  - Link with local, state and/or national public health entities to examine how you can provide the best up to date and accurate information
  - Have your group facilities been in contact with their local community resources (i.e. health department, emergency management, transportation resources, nursing homes, water and electricity companies, etc)?

Special needs

- Lessons learned:
  - Communication
  - Education
  - Prevention of supply shortage
  - Contingency/Continuity Planning
  - Identifying Appropriate Distancing Measures

Opportunity Knocks

- H1N1 has taught us that:
  - Relationships are key
  - There must be a sharing of resources
  - You must communicate/partner in advance – you don't want to be exchanging business cards on game day

Influenza

- Prevention
  - Workers:
    - Appropriate behavior/practice
      - Social Distancing
      - Hand Hygiene/Standard Precautions
      - Respiratory Hygiene/Respiratory Precautions
        - N95 mask
    - Vaccination with current influenza vaccine
    - Prophylaxis

Take Home Point

- Put a mask on the symptomatic person
  - Keeps droplet particles from transmitting virus
  - Saves you from having to put a mask on every health care/emergency worker that sick person comes into contact with

Social Distancing

- Works
- May be difficult to maintain over time
- Not possible for patient care

Recovery

- Criteria needed for calling an end to the crisis and resuming business-as-usual.
- Communication plan for advising of plan to resume normal operations.
- Timeline for restoration of operations.
- Plan to debrief – internal and external
- Structure for evaluating the effectiveness of the emergency response.

Lessons Learned from H1N1

- Investments in pandemic planning and stockpiling antiviral medications paid off.
- Public health departments did not have enough resources to carry out plans.
- Response plans must be adaptable and science-driven.

Lessons Learned from H1N1

- Providing clear, straightforward information to the public -- from the president on down to local officials -- was essential for allaying fears, building trust, and acting to contain the spread of the virus.
- School closings have major ramifications for students, parents and employers.

Lessons Learned from H1N1

- Sick leave and policies for limiting mass gatherings were also problematic.
- Communication between the public health system and health providers was not well coordinated, with many private clinicians not receiving guidance on a timely basis.
- The World Health Organization pandemic alert phases caused confusion.
- International coordination was more complicated than expected.

Pandemic Flu Today

Despite . . .

- Expanded global and national surveillance
- Better healthcare, medicines, diagnostics
- Greater vaccine manufacturing capacity

New risks:

- Increased global travel and commerce
- Greater population density
- More elderly and immunosuppressed
- More daycare and nursing homes
- *Bioterrorism*

What can we expect in the next pandemic(s)?

- Illness will spread
  - Quickly
  - Globally
- Health care system will be overwhelmed
- Vaccine
  - Non-existent or
  - Limited for 6 to 8 months
- Antivirals
  - Limited and/or
  - Non-effective

What can we expect in the next pandemic(s)?

- We can extrapolate the contents of the previous slides from our experiences with H1N1 as well as the rapidity with which SARS traveled from Hong Kong to Canada in 2003 - certainly gives reason to believe that a novel influenza virus arising abroad would likely reach the U.S. fairly quickly.

Reality

- In relation to pandemics,

  "*Clearly there are no reliable predictions about when we might expect new pandemic outbreaks but….there will be more*."

  - Dr Margaret Chan, World Health Organization (WHO) Director-General
    May 2010

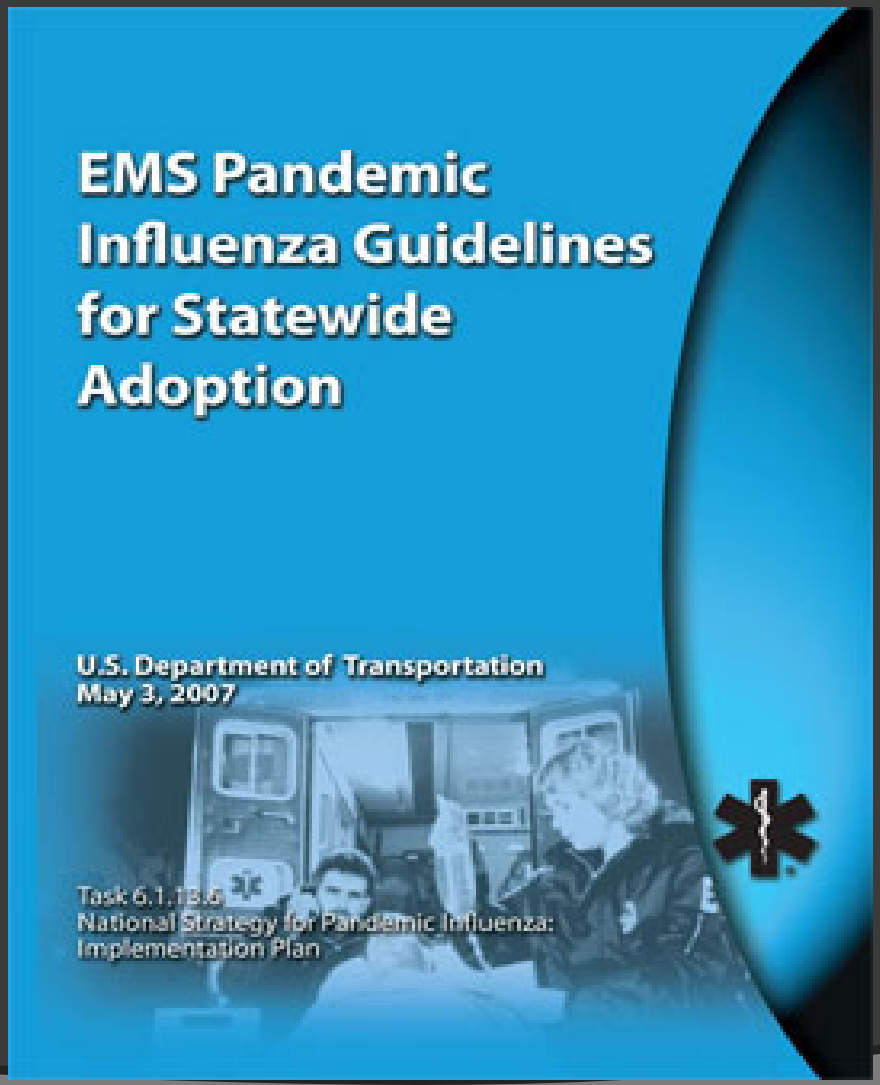
Last thoughts….

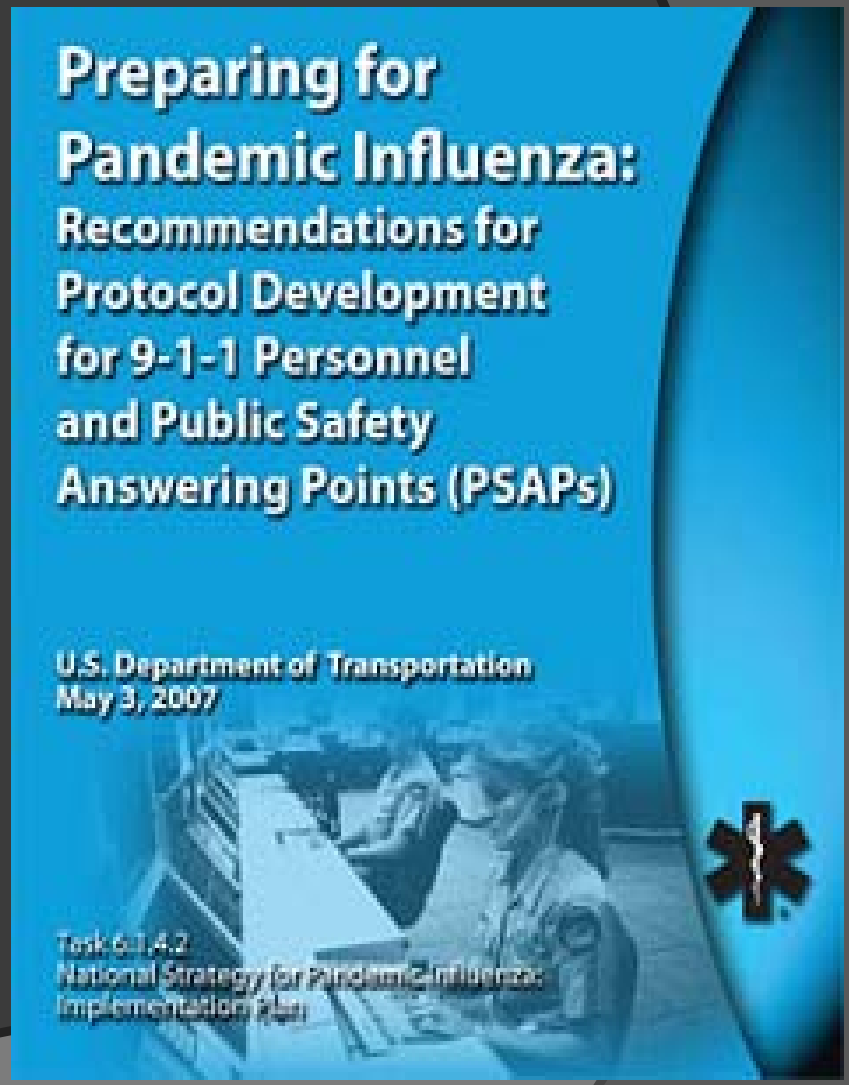
- Keep your eye on the goals…..patient care, public service and disaster response
- Remember : Relationship Building
  - Communicate in advance – you don't want to be exchanging business cards on game day
- Shared Resources
- No Empires!

Influenza resources

- Resources:
  - WHO:
    - www.who.org
  - CDC:
    - www.cdc.gov
    - www.flu.gov
  - NIAID:
    - www3.niaid.nih.gov

More resources





Thank you...

rbarishansky@gmail.com