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Emergency Preparedness

Practical realities for medicine and public Health

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A vantage point on preparedness issues

- 1990-93 – Science Adviser to President Bush
- 1998- Founding Director –
Center for Civilian Biodefense Strategies
(now Center for Biosecurity)
- 2001-02 – Director
DHHS Office of Public Health Preparedness
- 2002-06 Principal Science Adviser
Office of the Secretary, DHHS

Main message – COMPLACENCY MISPLACED
LOCAL COMMUNITY –
COUNTY RESPONSE
IS THE FUTURE

Many events require emergency responses

- **A different world than 50 years ago, growing more complex as populations grow and technology changes**
 - Natural disasters
 - Hurricanes, floods, tornadoes, etc
 - Accidents, fires resulting in multiple casualties
 - Chemical spills and releases
 - Infectious diseases
 - Natural causes – avian influenza, SARS, etc
 - Terrorist releases – anthrax
 - Nuclear accidents
 - Terrorist threats with explosive agents

Many emergency programs have evolved

- Local emergency services
 - Fire, medical, police
 - Hospital plans for emergency casualty care
- State emergency programs with FEMA support
 - Best developed in Florida, New York City, California
- Teams to deal with chemical spills and releases
- DOE teams for nuclear emergencies
- CDC Epidemic assistance groups
- National guard and Reserve forces
- Poison control centers
- Red Cross and volunteer agencies

Are current preparations sufficient?

- Natural events
 - Earthquakes and tsunamis
California, Afghanistan, Indonesia/Indian Ocean
 - Hurricanes, now anticipated to be more severe
Katrina, Kansas, Galveston, Long Island
- Terrorist events
 - World Trade Tower bombing, 1993
 - World Trade Towers destruction, 2001
 - Terrorist bombings – London, Madrid, Iraq
- Other threats of significance
 - Nuclear – industrial accident or terrorism
 - Biological – anthrax, pandemic influenza

Policy decisions –1995-2001

- Need for development of more robust, sustainable systems for dealing with catastrophic events of whatever cause
 - Biological – deliberate and natural
 - Nuclear –
 - Chemical
 - Explosives
 - Major accidents (e.g. plane and train)
 - Fire

Federal initiatives 1995-99

- Presidential Decision Directive #39 – 1995
- Development of first responders – 120 cities
 - Police, fire, emergency rescue
 - DoD to do the training
 - FBI to find the bad guys
 - Public health and medical care – ignored
- Assumption that chemical and biologic weapons required the same response
 - A new word “CHEMBIO”

After 2001

- Events of September and October 2001
 - Emergency consultation and review
 - Contact points – 24/7 with HHS and States
 - Bioweapons threat
 - Congressional meetings
 - The case for “public health emergency preparedness”
- Creation of a new office and a director
- Emergency appropriation of \$3 billion

Policy decision

Local community areas are a priority

- Speed and effectiveness of detection, diagnosis and response depend primarily on local resources
- Integrated planning is required involving civil authority, public health, hospitals, law enforcement, voluntary agencies, others
- Communication is critical
- Substantial additional resources are needed to augment the limited resources now available for public health and medicine

Benchmarks for each state

- Full-time Director of Program at state level
- Planning and oversight committees to embrace all constituencies at state and community levels
- Special committee for community-wide hospital planning to accommodate 500+ emergency patients
- All hospitals to have negative pressure rooms in ERs
- Plan for distribution of antibiotics or vaccines to all in a state within 10 days
- Plans for risk information dissemination to community and communication networks

Special needs at national level

- Surveillance
 - Command Centers on 24/7 alert
 - National health alert network
 - Laboratory response network
- Response
 - Emergency teams available for public health, medical, veterinary, mortuary need
 - 12 emergency stock piles
 - Smallpox vaccine
 - Antibiotics for anthrax, plague, tularemia

Status in 2007

- Excellent progress in some states and community areas but, overall, less than had been hoped for
 - A major step administratively, politically and practically. Cannot be done overnight
 - Complacency in areas less affected by frequent or even occasional catastrophes
 - Federal leadership has been less than what was desired and handicapped by in-fighting

Pandemic flu –a test for preparedness

- H5N1-unprecedented flu strain causing massive deaths in poultry and 50% death rate in humans
- Influenza 1918-H1N1
 - Case fatality rate – about 2 %
 - Deaths U.S. 675,000
 - World 50,000,000
- H5N1 influenza 2004-2007
 - 280 cases, about 140 deaths

Status – May 2007

- Infected wild fowl, chickens, ducks, turkeys
 - Asia
 - Much of Eastern Europe
 - Africa
 - Human cases-contacts of birds, a few patients
- Vaccination and slaughter of fowl
- Embargo on fowl from infected areas

Prospects for the U.S.

- Avian H5N1 likely means of importation
 - Migratory birds
 - Bird smugglers
- Human pandemic flu
 - Will it occur
 - When might it occur
 - Can it be slowed or stopped
- Reality and myth

Influenza deaths by week –1918-19

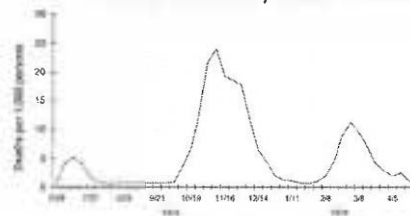
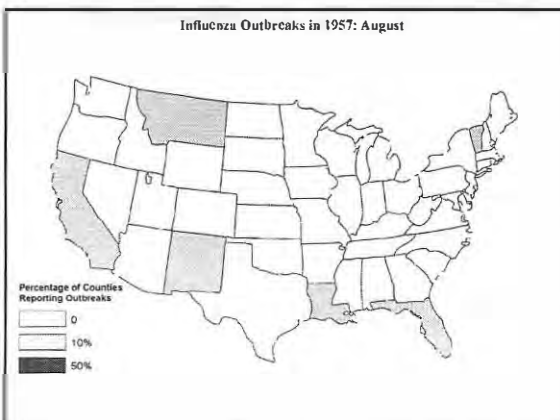


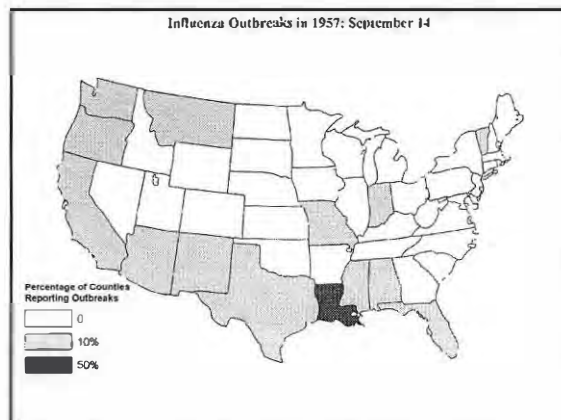
Figure 1. Three pandemic waves: weekly combined influenza and pneumonia mortality, United Kingdom, 1918-1919.

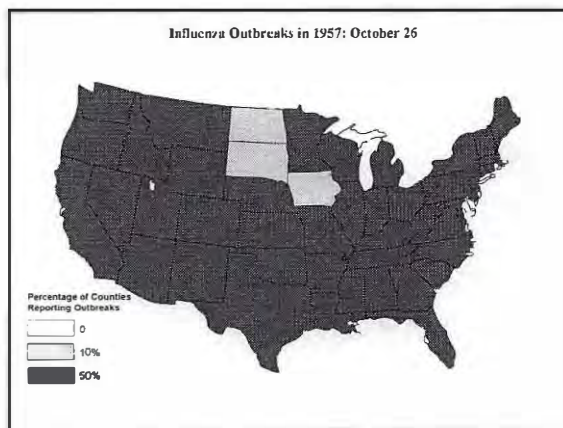
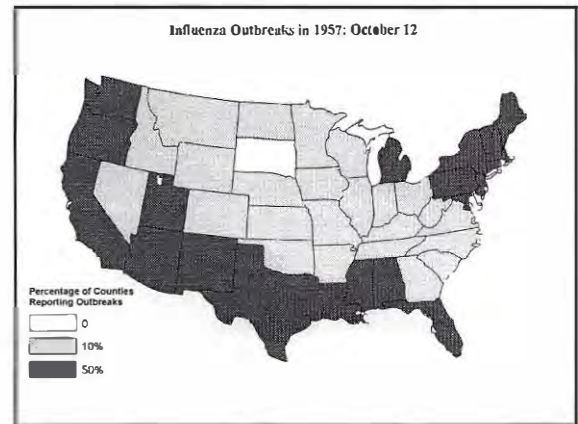
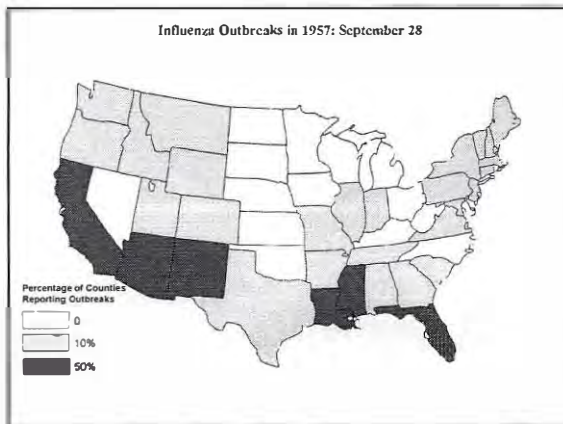
Source: Tanshenberg & Mann (EID 2006)

Influenza Outbreaks in 1957: August



Influenza Outbreaks in 1957: September 14





Outbreak assumptions

- Pandemic planning premises:
 - Proportion of population ill: 25 – 30%
 - Duration of outbreak: 8 weeks
 - Average duration of illness: 10 days
 - Case/fatality ratio: 2.5%
- Maximum % ill on any given day ~10%

1918 Economic impact

- A major recession did not occur
- October retail sales declined but rebounded in November
- Economic impact was modest ~5%
- Sectoral failures did not occur
- The October draft was postponed by 3 months
- "A hit and run epidemic that produced only a brief slow down"

R. Halichett, October 17, 2006

Expected impact –medical care

Peak weeks (5 to 8) at 25% attack rate

- Demand for beds – 191% of capacity
- ICU beds – need for 461% of present capacity
- Ventilators – need for 198% of available supply

CDC FluSurge model –HHS planning assumptions