

# Pandemic Influenza Planning and Response

## Kentucky Prepares Together

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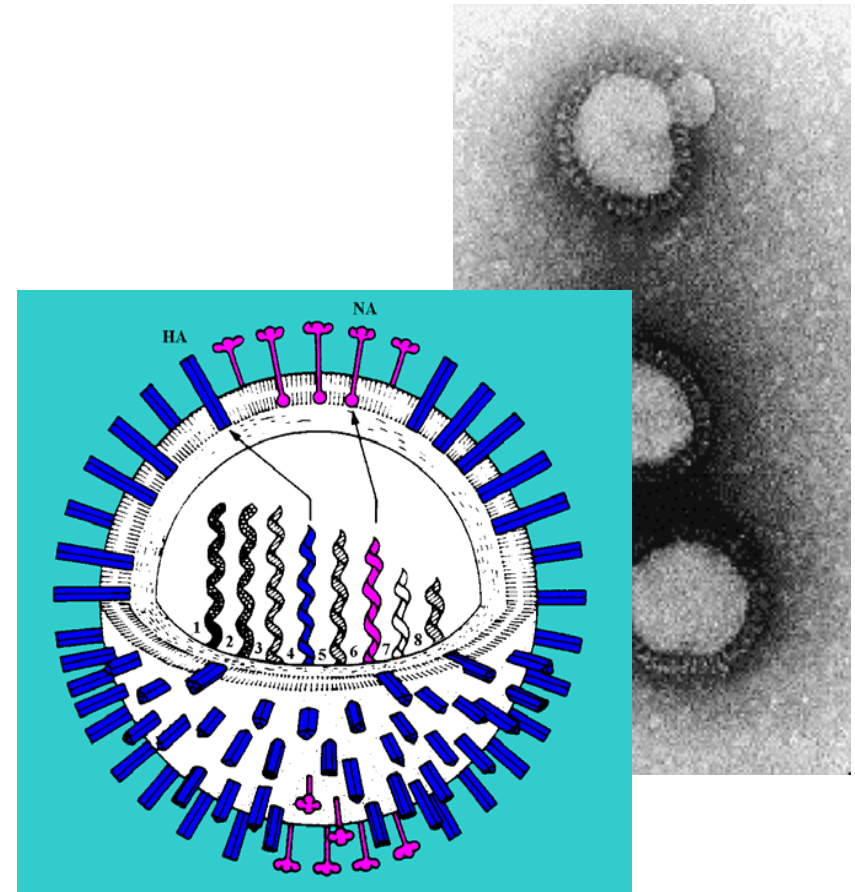


# Purpose of Local Summits

- Inform and engage all facets of the community about the threat of a potential influenza pandemic and its possible impact on the community's infrastructure
- Encourage community-wide planning and preparation for a successful response to pandemic influenza outbreaks

# Influenza (Flu)

- Infection and disease of birds, swine, horses, marine mammals, dogs, and man
- Migrating birds and waterfowl are major reservoir for influenza A virus
- In humans, influenza can cause fever, headache, cough, nausea, vomiting and even death



# How Humans Spread the Flu

- Droplet or contact spread
- Infectious period
  - Adults: 1 day prior to symptoms to about 5 days after onset
  - Young children and immunocompromised, much longer
- Incubation period
  - 1 to 4 days



Image Source: *Human Biology*, Starr and McMillan

# Influenza: an evolving virus

- Type A: usually more severe illness; classified into subtypes based on distinct virus antigens (H and N)
- Type B: often milder illness; not subtyped
- Flu viruses rearrange genetic material, so that actual circulating strains may be different from year to year
- Each season, vaccine is produced to match the A and B strains that are predicted to be circulating that year

# Seasonal Epidemic vs. Pandemic

- **Epidemic:** An outbreak of influenza that varies in intensity, with more cases than seen normally in a locality
  - Antigenic “drift”: minor rearranging of virus genes
  - Epidemics can occur every winter: seasonal influenza
- **Pandemic:** Severe outbreak that rapidly progresses to involve all parts of the world
  - Antigenic “shift”: major rearranging of virus genes to which the overall population has no immunity
  - Only influenza A viruses cause pandemics
  - Pandemics occur approximately every 25-30 years

# Seasonal & Pandemic Relationship

## Seasonal Influenza Preparedness



## Pandemic Influenza Preparedness

Preparing for a pandemic now will mean:

Lives saved during seasonal influenza

Modern seasonal influenza vaccine for all who need it

New antiviral drugs for prevention and treatment

Community health protection from other threats

Peace of mind

# The Burden of Influenza

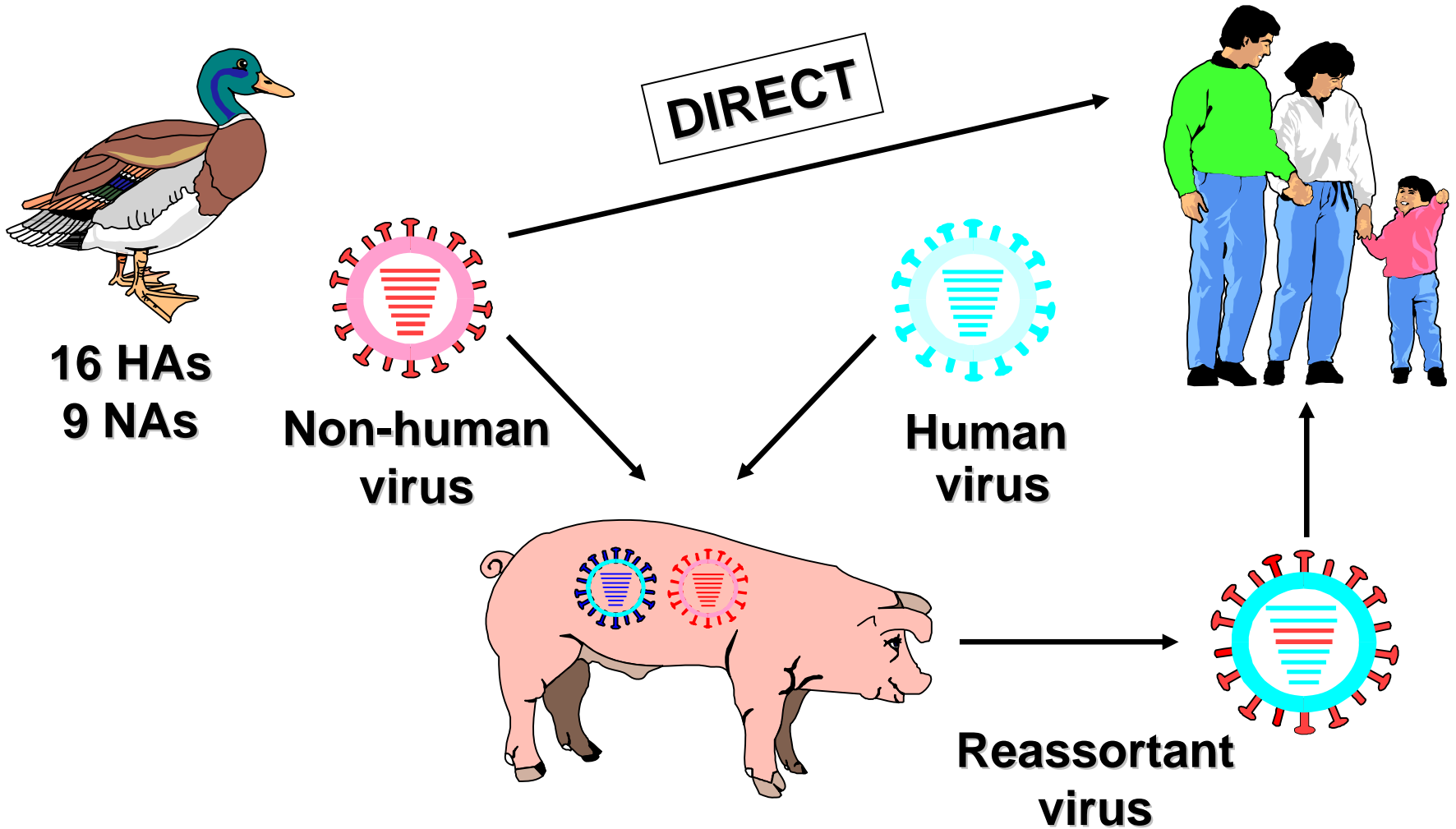
## Seasonal Influenza

- Globally: 250,000 to 500,000 deaths each year
- In the United States each year:
  - 36,000 deaths
  - >200,000 hospitalizations
  - \$37.5 billion in economic costs from influenza and pneumonia

## Pandemic Influenza

- An ever-present threat

# Potential Sources for Genetic Mixing

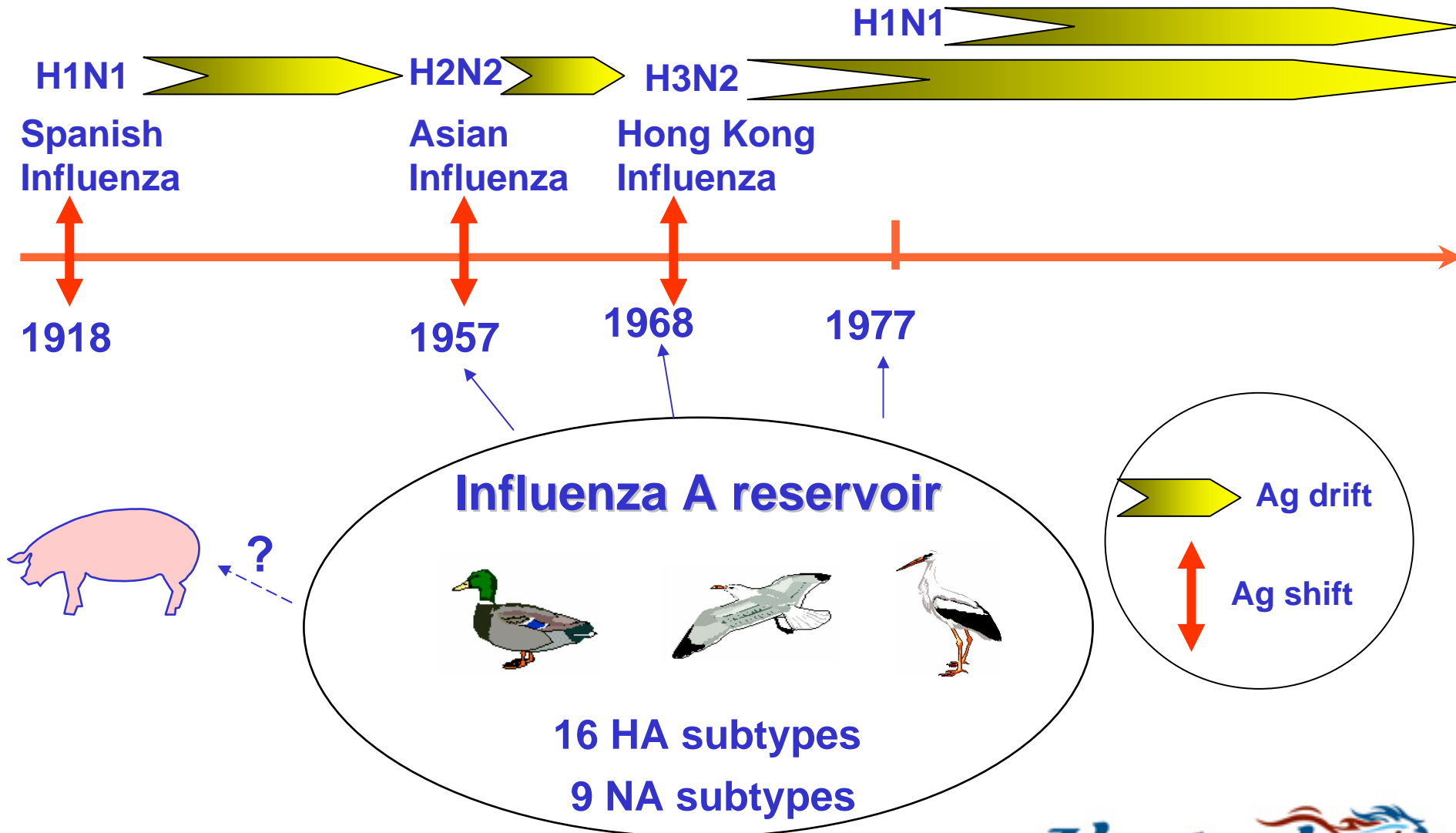


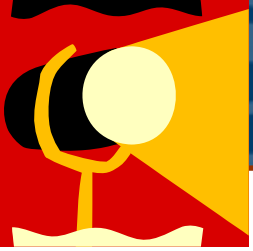
Source: CDC Influenza Branch

Cabinet for Health and Family Services



# Circulation of Influenza A Viruses in Humans





# H5N1 – the virus in the spotlight !

- H5N1 variant, AKA avian influenza or “bird flu”
- Currently isolated from birds in multiple countries in Asia, Africa, Middle East, and Europe
- Limited spread to people, but high case fatality rate (50%) among known cases
- Poor human-to-human transmission, but that could change if virus mutates--- potentially beginning a new human pandemic
- Migratory bird surveillance underway along flyways from Asia to North America
- **To date no H5N1 virus has been isolated from any source (birds or people) in United States**

# Possible Impact of Pandemic in KY\*

- **Health**

- **Deaths: 3000 – 7000**
- **Hospitalizations: 9,200 – 21,400**
- **Outpatient visits: 455,000 – 1.06 million**

- **Economic**

- **Infrastructure: Thousands at home either ill or caring for the ill**
- **Agricultural: if pandemic strain is avian flu**

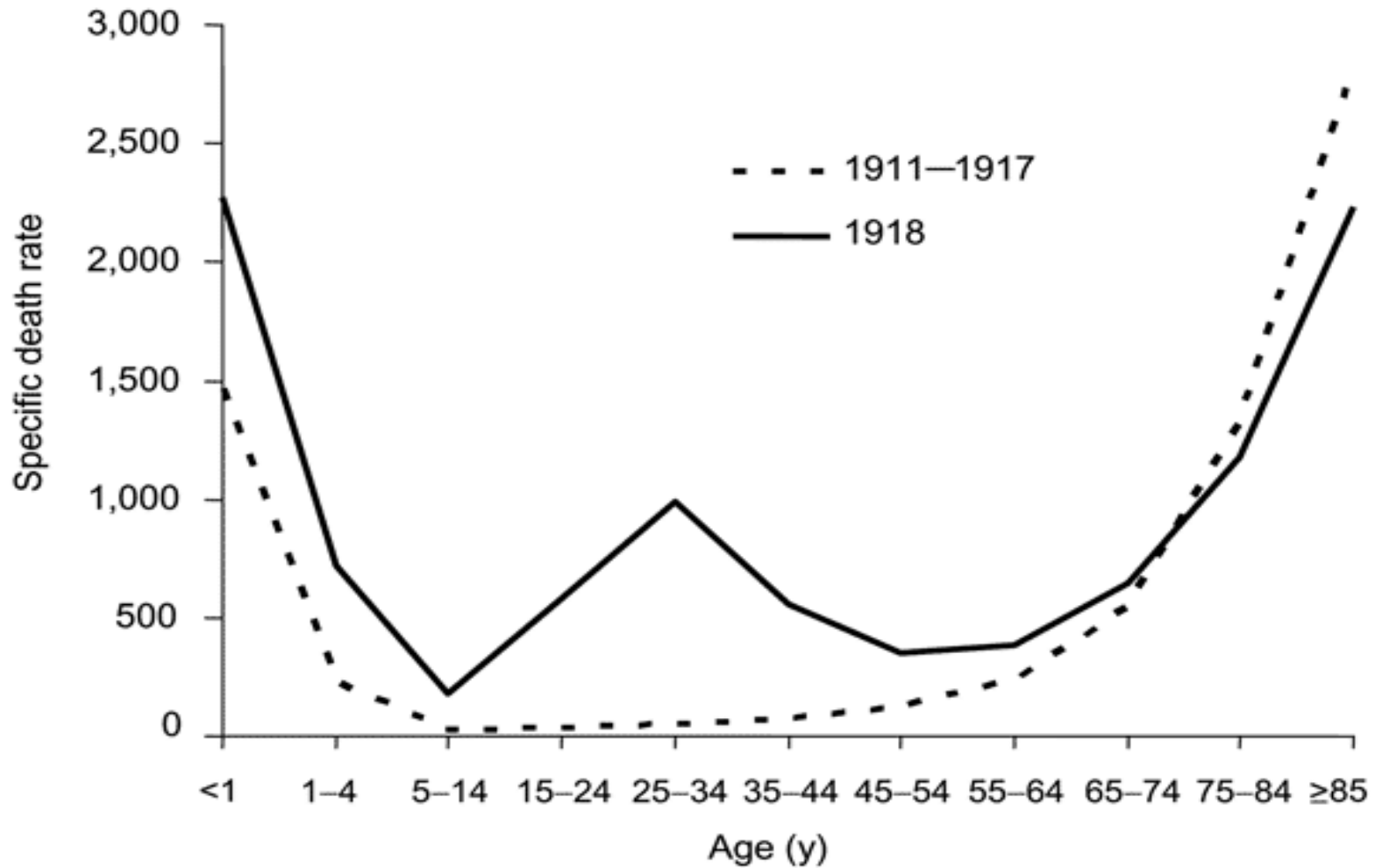
\*Model assumes attack rates of 15-35 % and is based on the 1968 pandemic, and a US population of 290 million persons.

Meltzer M, et al. Emerging Infectious Diseases 1999;5:659-671.

# Planning Assumptions

- **Pandemic is NOT preventable**
- **Universal susceptibility to novel virus**
- **Pandemic outbreak will last 6 - 8 weeks**
- **Multiple (2 – 3) pandemic waves are likely**
- **Clinical disease attack rate, up to 30%**
  - children (40%); adults (20%)

# Mortality rate by age: 1918 pandemic



# More Planning Assumptions

- **Half of those ill are likely to seek outpatient medical care**
- **Up to 10-fold variation in hospitalization / death rates depending upon virulence of virus**
- **Demand for medical services will greatly exceed supply**
- **Essential community services may be altered by employee absenteeism**
- **Infrastructure of community may be threatened**

# Challenges

- **Some decisions cannot be made until the science (epidemiology) of the actual pandemic unfolds**
- **Unknown if antiviral drugs will be effective**
- **Likely limited availability of effective vaccine early in pandemic; priority groups a necessity**
- **Surge capacity limited; must depend on routine public health interventions.**

# Why plan?

- **Mother Nature does not “aim”; all are at risk**
- **Planning goal: prevent illness and death, and preserve critical community infrastructures by slowing disease spread, decreasing consequences of disease, keep critical sectors going**
- **The public / private health care system can not protect us from a pandemic**
- **Therefore all sectors must participate in planning, exercising, and responding**



# Key Components of Pandemic Planning

- **Surveillance systems**
- **Quarantine / isolation procedures**
- **Public health personnel (staff + training)**
- **Medical surge capacity (staff + equipment)**
- **Predetermined Priority Groups as antivirals drugs and/or vaccine becomes available**
- **Distribution systems (e.g. Strategic National Stockpile)**
- **Government / Business contingency plans**

# Integrating Levels of Response

- **International:** WHO Pandemic Influenza Plan
- **National:** HHS Pandemic Influenza Plan (11/05)
- **State:** Kentucky's Pandemic Influenza Plan (since 2003 and updated regularly)
- **Local:** Health Departments, communities, and HRSA planning regions
- **Individual:** Citizen's and families' plans

# Federal government preparations

- Expansion of production of current (egg-based) vaccine
- Acceleration of development of modern (cell culture, non-egg-based) vaccines
- Evaluation of dose-sparing technology (adjuvants, intramuscular vs. intradermal route)
- Addition of antivirals to federal stockpile
- Acceleration of development of promising new antiviral candidates
- Planning checklists developed

# All-Hazards Approach to Planning in KY

- Pandemic plans are a subset of State and Local Public Health's Disaster Response and Recovery Plan
- Flexible, yet comprehensive plans evolving
- Plans must be exercised and updated, not left on a shelf
- Pandemic planning is the “ultimate plan”: if prepared for a **pandemic**, we can respond to any communicable disease threat

# Kentucky's Strengths

- **Long tradition of collaboration across a tightly knit state: state / local and public / private health**
- **Bioterrorism Advisory Committee since 2001 and Pandemic Influenza Preparedness Group, with plan since 2003**
- **“Pop Quizzes” test our response plans: West Nile virus, anthrax threats, SARS, tornados, chemical spills, Katrina, seasonal influenza vaccine, etc...**
- **Innovations in Public Health Information technology: telehealth, Health Alert Network, and e-Health Board**

# Collaborative Planning Partners

- **State and Local Public Health Departments**
- **Private Healthcare professionals (hospitals, physicians, pharmacists, etc.)**
- **Kentucky Emergency Management (state / local)**
- **Kentucky Department of Agriculture**
- **Kentucky Office of Homeland Security**
- **Kentucky Law Enforcement (Justice Cabinet)**
- **Government Officials ( state / local)**
- **Kentucky National Guard (41<sup>st</sup> Civil Support Team)**

# Ways to Deal with Pandemic Influenza

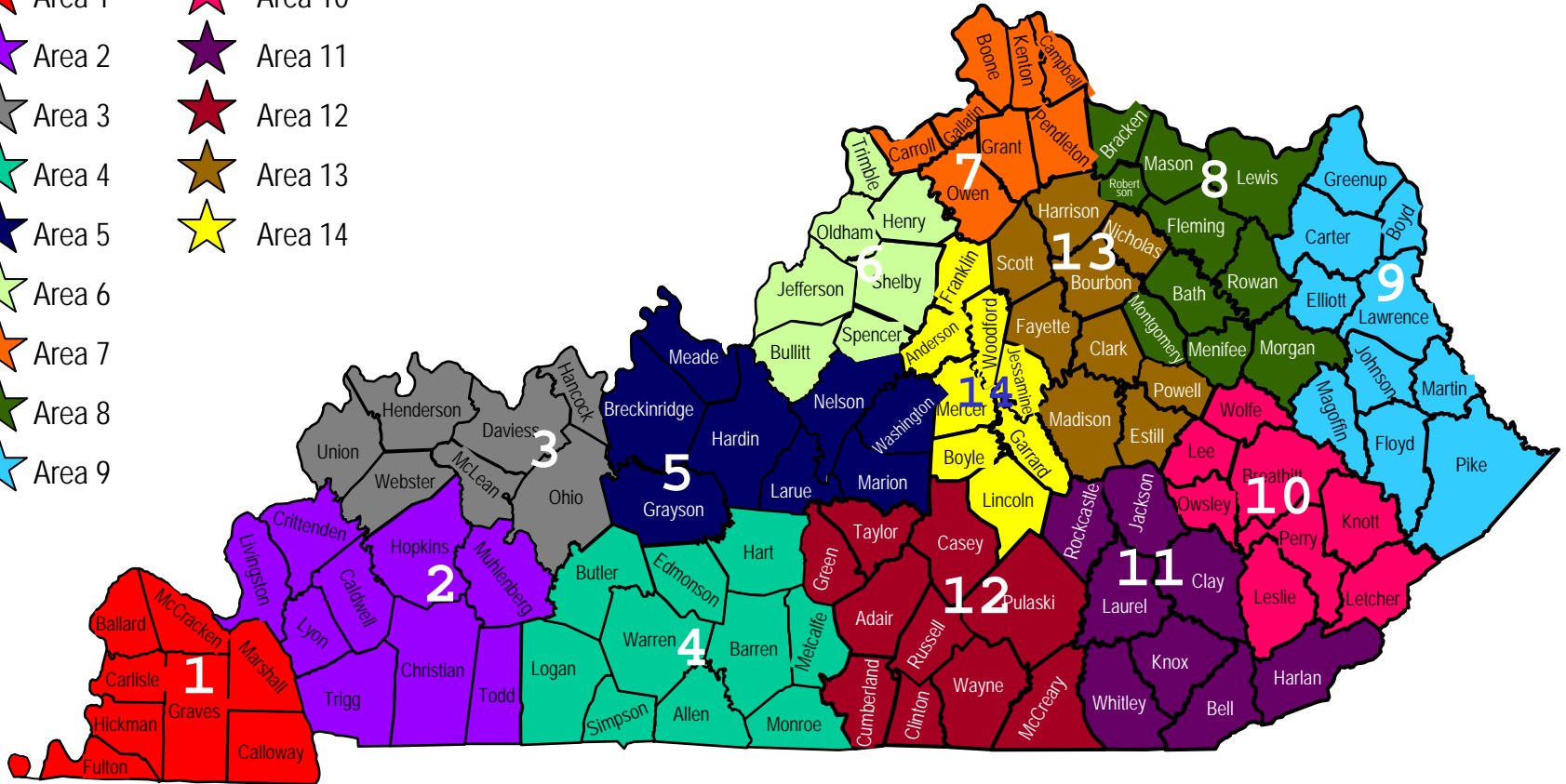
- **When there is a novel virus only in birds**
  - Culling / vaccinating domestic bird flocks
- **When person to person spread starts**
  - Quarantine / Isolation
  - Antiviral medications
  - Development of new vaccine
- **When there is widespread dissemination**
  - Antiviral medications
  - Vaccine distribution / administration
  - Social Distancing

# Health Care Systems

- **Alternate Care Sites for Surge Capacity**
  - Triage / Referral Points
  - Neighborhood Emergency Health Centers
- **Staffing**
  - Sustained Operations and Surge Capacity
  - Volunteers, Retirees, etc.
- **Hospital / Medical shortages**
  - ICU beds, ER beds, in-patient beds
  - Equipment shortages – Respirators, Masks
- **Medication Shortages**

# HRSA Regions

- ★ Area 1
- ★ Area 2
- ★ Area 3
- ★ Area 4
- ★ Area 5
- ★ Area 6
- ★ Area 7
- ★ Area 8
- ★ Area 9
- ★ Area 10
- ★ Area 11
- ★ Area 12
- ★ Area 13
- ★ Area 14



# Isolation / Quarantine

- **Potentially useful early in outbreak**
- **Probably not useful after person to person transmission well established**
- **Prudent message on “social distancing”**
  - **Stay home when you’re sick**
- **Closure of community gatherings**

# Antiviral Issues

- Worldwide shortage of antivirals
  - National Stockpile would be quickly depleted
  - State and/or local governments unlikely to be able to stockpile
  - Ethics of diverting meds from use in seasonal influenza treatment strategies
- Treatment / containment vs. prevention
- Local decisions needed on priority groups
- Susceptibility / dosages may change
- \*\*Counterfeit drugs being sold via Internet

# Expected Vaccine Availability in a Pandemic

- No vaccine against pandemic virus will be available for the first six months or more due to egg-based production methods
- Limited vaccine supply for ~six months after production begins
- Local decisions needed on priority groups
- Two doses would be required for full protection from the vaccine because it will be a new type of virus for humans

# Risk Communications

- **Clearly communicate messages to the public**
  - Prepare people with information
  - Encourage action steps to prepare now
  - Provide updates when new information emerges
  - Use trusted messengers
  - Coordinate to ensure consistent messages
  - Address rumors and inaccuracies

# Pandemic Planning: Community Level

- Pandemic planning needs to go beyond public health**
  - Healthcare (hospital, physician offices, home health)
  - Businesses (both large and small)
  - Schools and universities
  - Faith and community organizations
  - Travel industry in some locations
  - Individuals and families
- **Local pandemic summit is part of this process**
- **Find ways to sustain planning and preparedness, even when threat is less apparent**

# How every Kentuckian can prepare. . .

## Advice for both seasonal and pandemic influenza

- **Develop an “all hazards” emergency preparedness family plan**
- **Get a flu immunization each fall**
- **Wash hands frequently**
- **Cough / sneeze into tissue or elbows**
- **Avoid crowds during outbreaks**
- **If sick, stay home from work / school**

# Lessons Learned from Recent Events

- **Public may not prepare even if repeatedly warned**
- **Real disasters may be worse than expected**
- **Outside help may be delayed in coming**
- **Concerns over health and safety of their family will affect responders**
- **Communications and logistics are critical success factors**
- **Impact may be both medical **and** economic**

# Closing Thoughts

- **A pandemic does not appear imminent at this time**
- **Do not panic, but do get prepared**
- **Another pandemic will occur, we just don't know when**
- **A prepared community is stronger, because it is better prepared to deal with any health threat**