

**Determined Accord Tabletop Exercise
November 1, 2006**

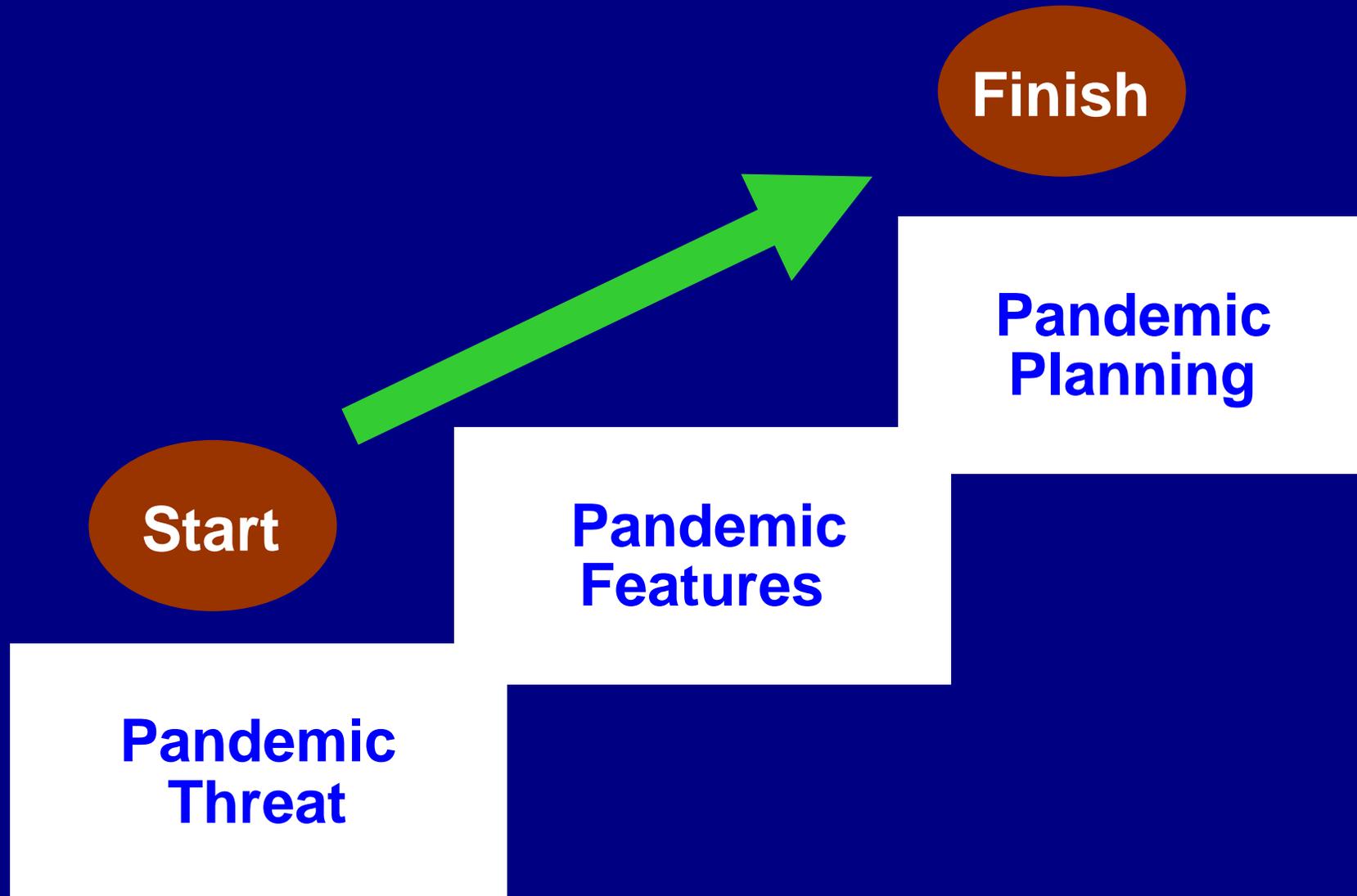
Pandemic Influenza Preparedness



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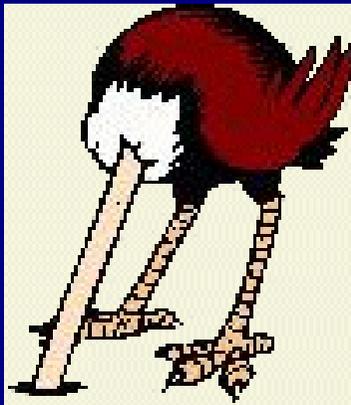


Outline of Presentation



Goal: A Balanced Approach

Inspire Preparedness Without Panic



“It can’t happen. There’s nothing we can do about it.”



“The sky is falling... We’re all going to die!”

Influenza Background

- Respiratory illness caused by a virus
- Symptoms include fever, cough, sore throat, muscle aches, body aches, headache
- Spread mainly via large droplets produced when infected person coughs or sneezes
- Incubation period is usually 1 to 3 days
- Can infect others beginning 1 day BEFORE symptoms develop and up to 5 days AFTER becoming sick

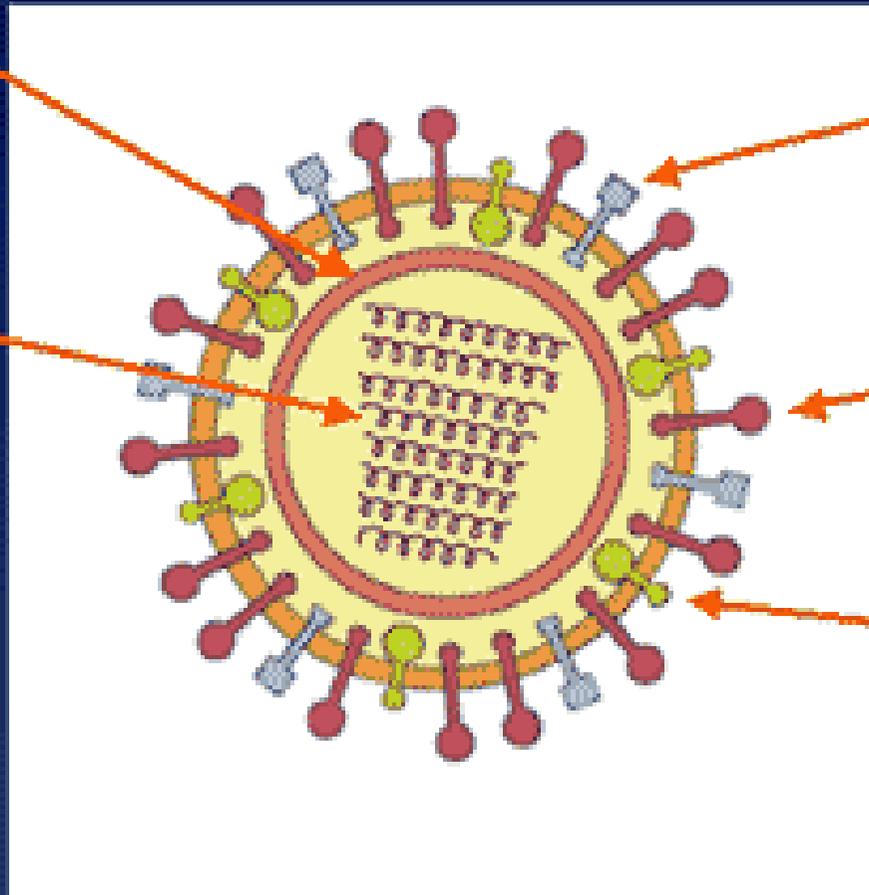


The Influenza Virus

Influenza Type A

Matrix protein

Segmented
RNA genome

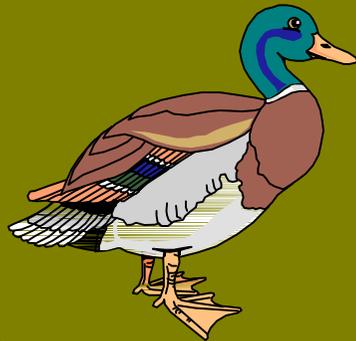


Neuraminidase
(N)

Hemagglutinin
(H)

M2 ion channel
protein

**Avian Influenza
A Viruses
H1 - H16
N1 - N9**



**Human Influenza
A Viruses**

**H1 - H3
N1 - N2**



Human vs. Avian Influenza

- “Human influenza” refers to those subtypes that spread widely among humans: H1N1, H1N2, H3N2 currently circulating among humans
- “Avian influenza” refers to influenza A subtypes that primarily affect birds
 - Highly pathogenic avian influenza (HPAI)
 - Low pathogenic avian influenza (LPAI)



CDC Chief says Avian Flu is Biggest Threat

“This [avian influenza H5N1] is a very ominous situation for the globe... it is the most important threat we are facing right now.”

***Dr. Julie Gerberding
Director, CDC, Feb 2005***



“[In] March, I wrote that we are in a race, a race against a fast-moving, highly potential human flu pandemic. Three months later, the pace has not slackened.”

***Secretary Michael Leavitt
June 29, 2006***



Avian Influenza H5N1 in Birds

- Dec 2003 – Ongoing
- Unprecedented rapid spread of H5N1 to 55 countries in Asia, Europe, and Africa
- Affecting domesticated fowl and wild birds
- Most severe outbreak ever recognized; over 220 million birds died or depopulated



Avian Influenza H5N1 in Humans

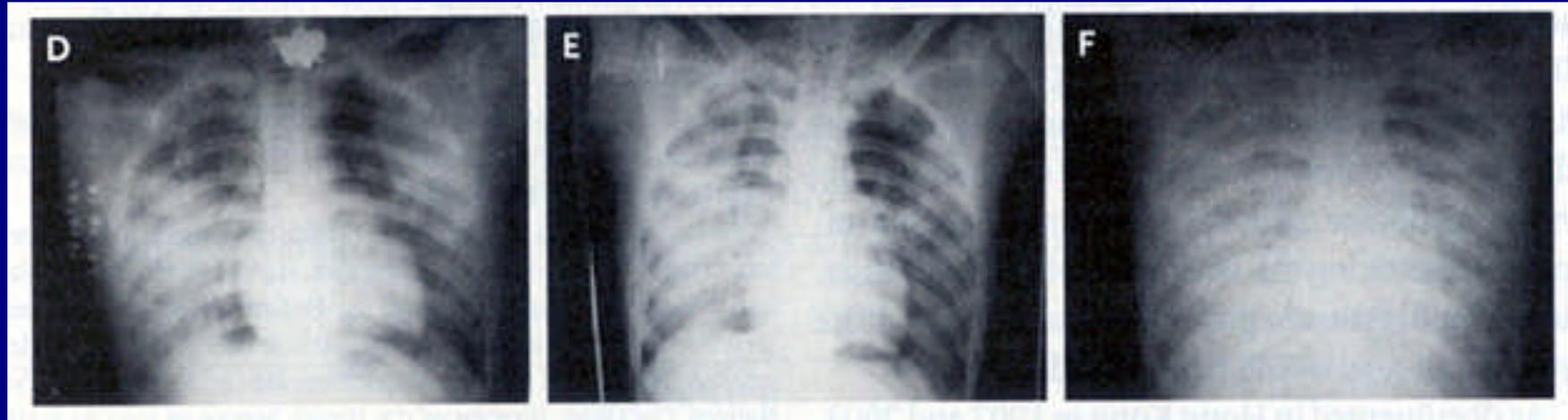
- Dec 2003 – Ongoing
- 256 human cases, with 151 (>50%) deaths*
- Cases in Vietnam, Iraq, Indonesia, Thailand, China, Turkey, Egypt, Cambodia, Azerbaijan, Djibouti
- Median age of cases was 20 yrs; 90% < 40 yrs**
- Case fatality rate highest among 10-39 yrs; lowest among > 50 yrs**



*As of October 16, 2006

**Based on 203 confirmed H5N1 cases published by WHO

H5N1 Influenza Severe Pneumonia - Vietnam 2004



DAY 5

DAY 7

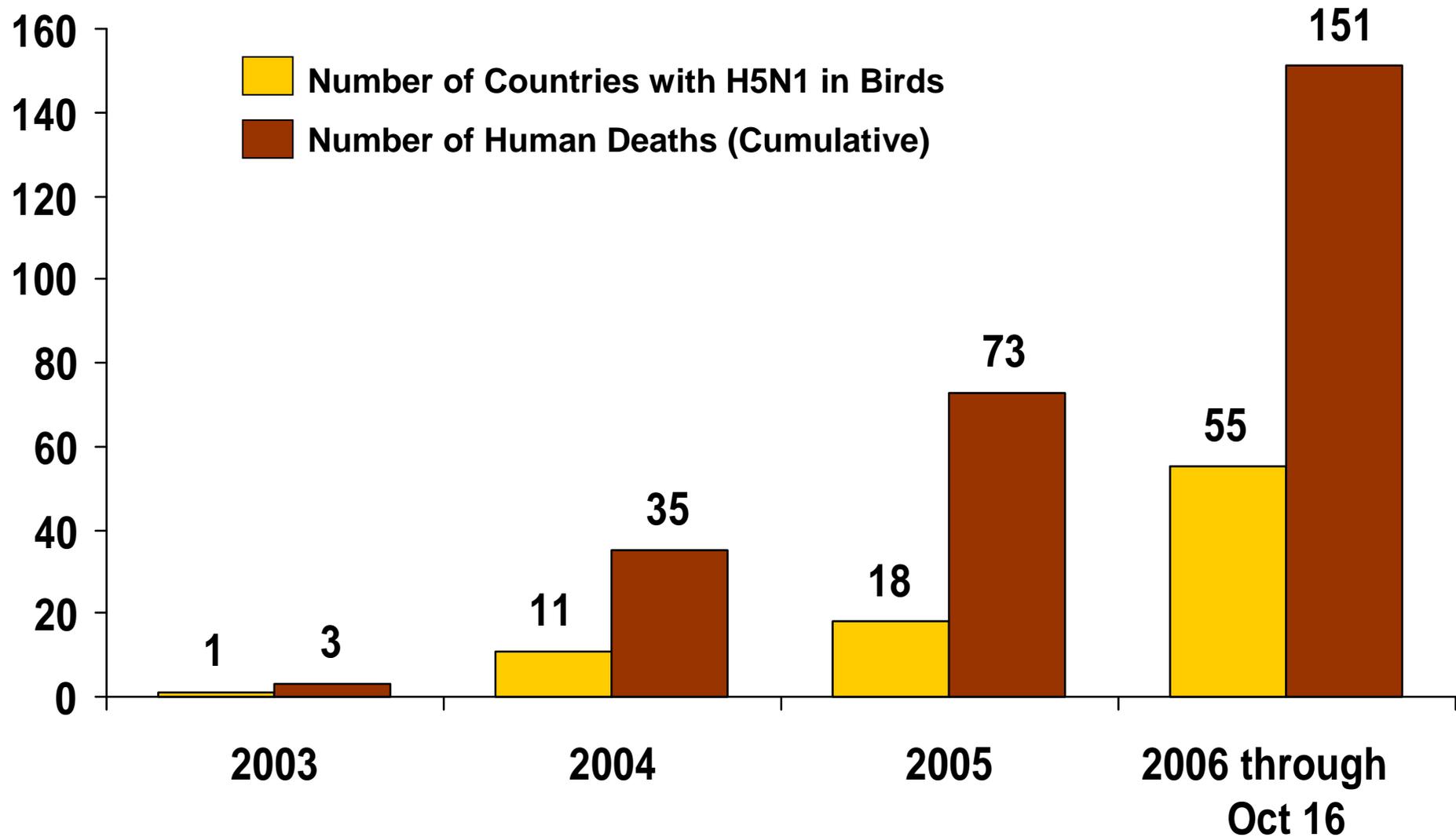
DAY 10

Avian Influenza H5N1 in Humans

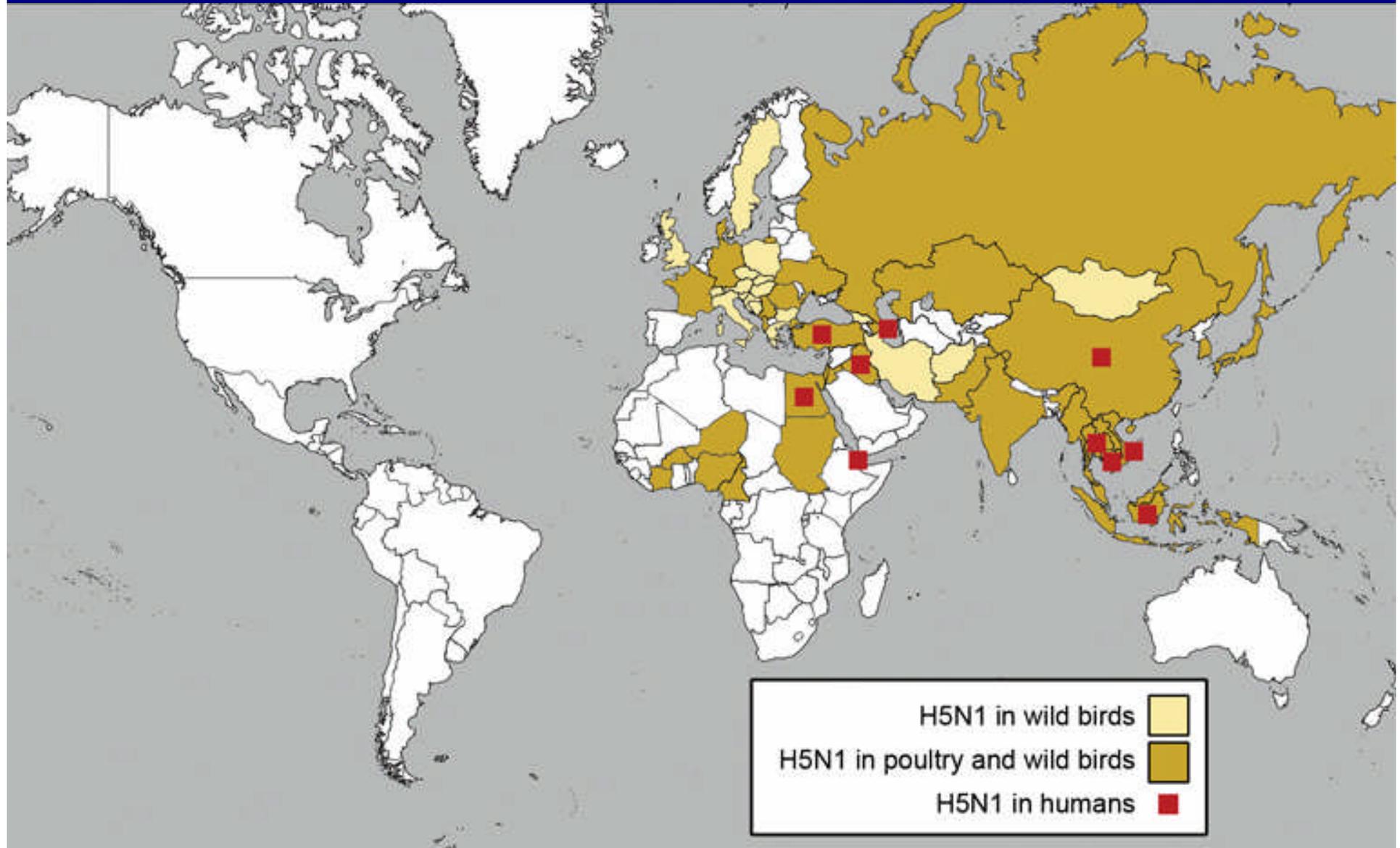
- Most human cases have involved direct contact with poultry or contaminated surfaces
- Types of exposures include:
 - Plucking and preparing diseased birds
 - Handling fighting cocks
 - Playing with poultry (particularly ducks)
 - Consumption of duck blood
- Some limited person-to-person transmission



Countries with H5N1 and Cumulative Human Deaths



Distribution of H5N1

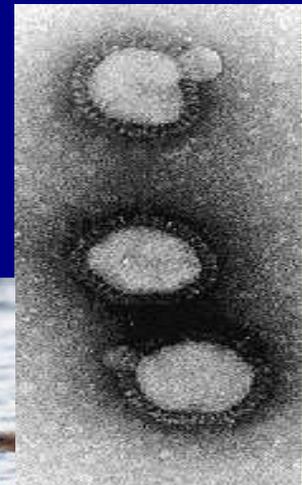


Risk of H5N1 to Americans

- **Current risk to Americans is low**
- **The strain of H5N1 virus found overseas has not been found in the U.S.**
- **There have been no human or poultry cases of H5N1 in the U.S.**
- **Potential routes of introduction into U.S. include via an infected traveler, migration of infected wild birds, illegal importation of infected birds**

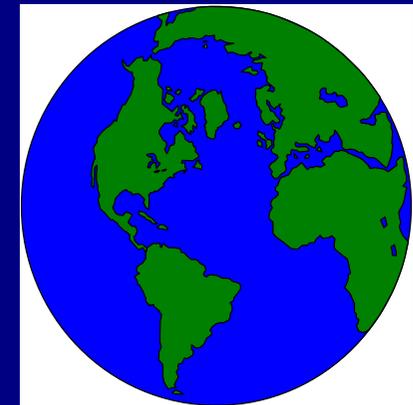
Potential Threat

1. Arrival of H5N1 in U.S.
2. Evolution of H5N1 into a pandemic strain



Pandemic Influenza

- Is a global outbreak
- Occurs when following conditions are met:
 - A new virus
 - Susceptible population
 - Ability of virus to cause disease
 - Ability of virus to spread easily from person to person

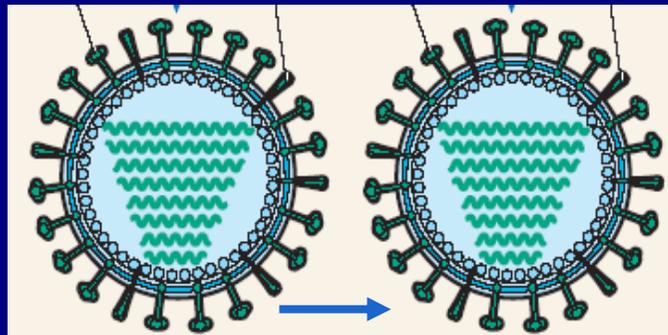
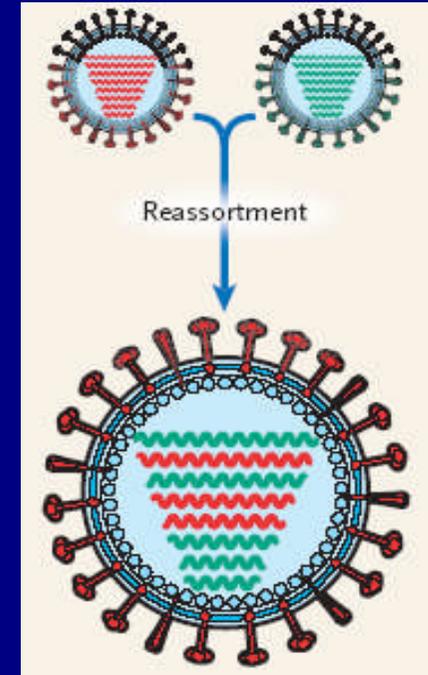


WHO Pandemic Influenza Phases

Inter-pandemic phase New virus in animals, no human cases	Low risk of human cases	1
	Higher risk of human cases	2
Pandemic alert phase New virus causes human cases	No or very limited human-to-human transmission	3
	Evidence of increased human-to-human transmission	4
	Evidence of significant human-to-human transmission	5
Pandemic phase	Efficient and sustained human-to-human transmission	6

Emergence of Pandemic Strain

- Genetic reassortment: exchange of genetic material between an avian strain and a human strain
- Gradual adaptation of an avian strain into a human pandemic strain (adaptive mutation)



Pandemic Threat of H5N1

- **Good news:**

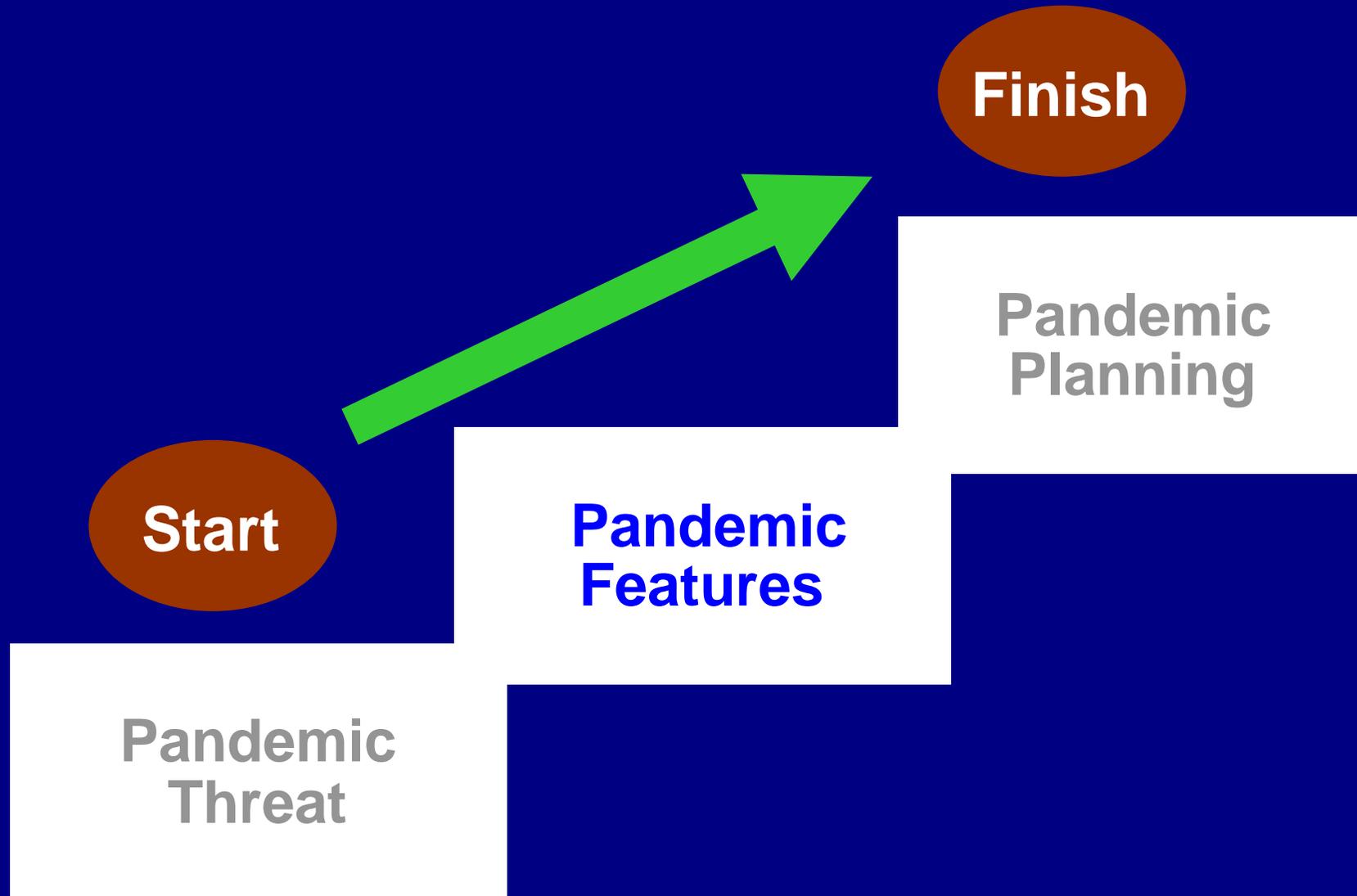
- No evidence of genetic reassortment with human influenza A viruses
- No evidence of efficient and sustained human-to-human transmission of H5N1 viruses

- **Bad news:**

- H5N1 viruses are circulating widely among poultry in Asia, and cannot be eradicated in near future.
- H5N1 infections of humans, although uncommon, have resulted in severe illness and high mortality
- H5N1 viruses are continuing to evolve and have the potential for genetic reassortment to a pandemic strain



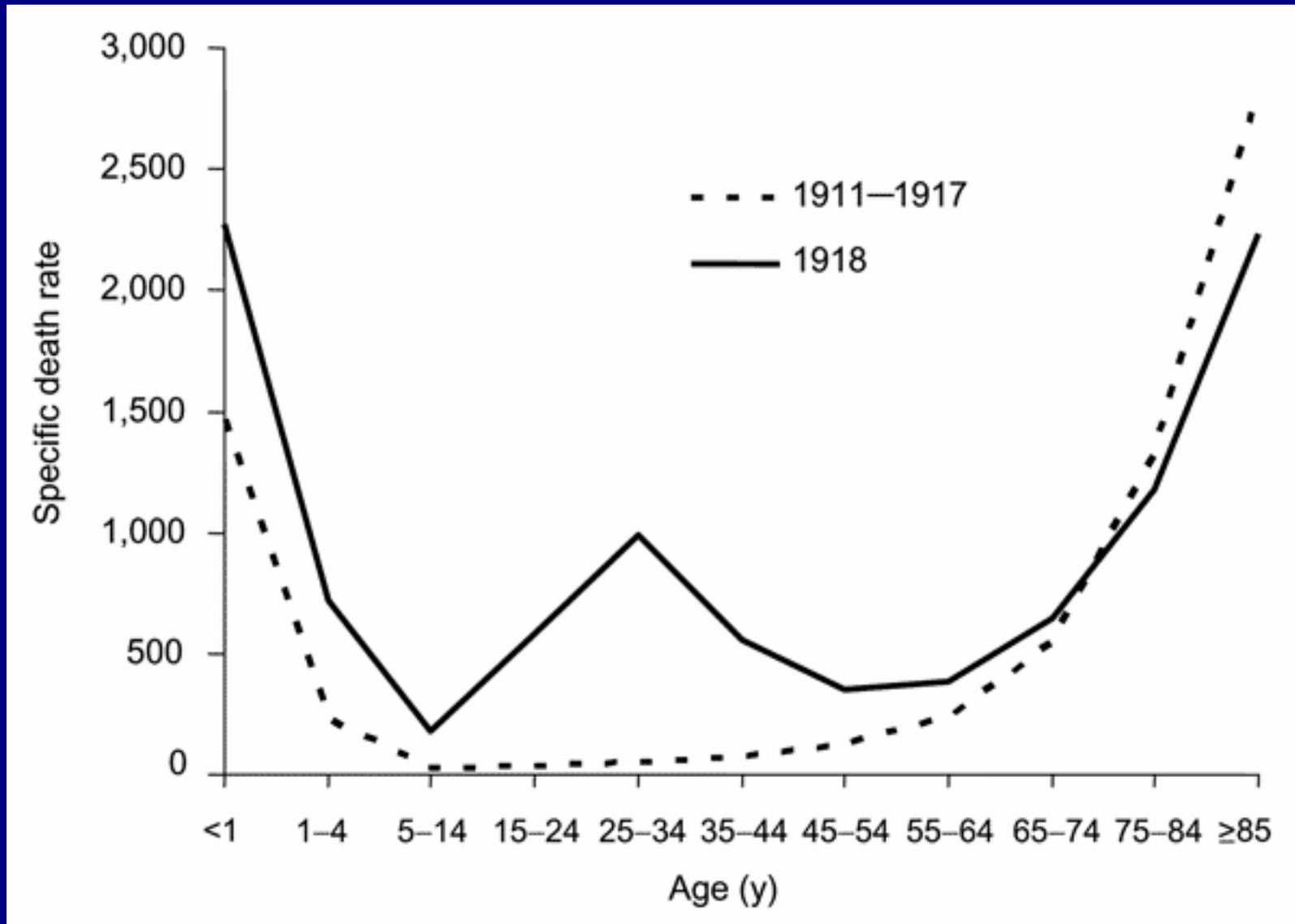
Outline of Presentation



Influenza Pandemics of the 20th Century

Year	Colloquial name	Subtype	No. of Deaths	
			Worldwide	U.S.
1918	Spanish flu	H1N1	100 million	500,000
1957	Asian flu	H2N2	1 million	70,000
1968	Hong Kong flu	H3N2	1 million	34,000

Influenza Age-Specific Death Rates

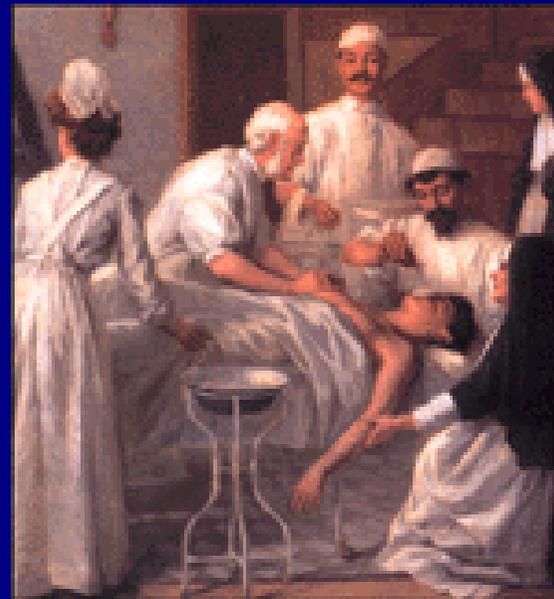
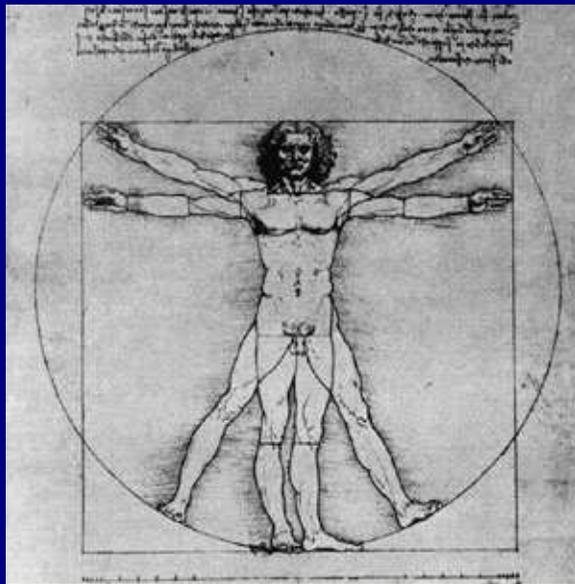


Influenza Pandemics of the 20th Century

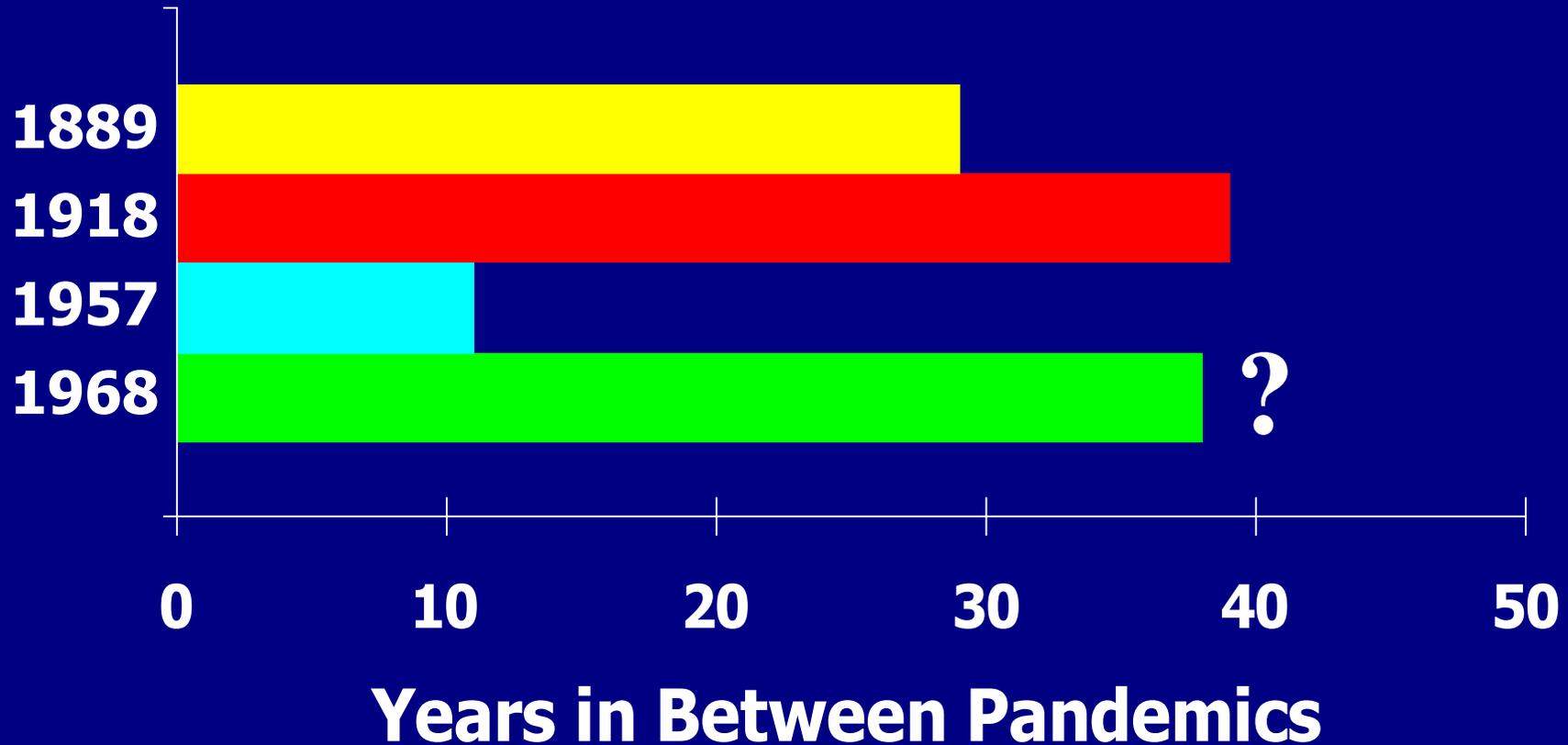
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“History repeats itself; that’s one of the things that’s wrong with history.”

Clarence Darrow, U.S. defense lawyer



Time Interval Between Influenza Pandemics



Features of a Pandemic

- There will be relatively little warning before pandemic strikes

Year

1918

2006

World Population

1.8 Billion

6.5 Billion

**Primary Mode of
Transportation**

**Ships,
Railroad**

**Jet airplane,
Automobile**

**Time for Virus to
Circle the Globe**

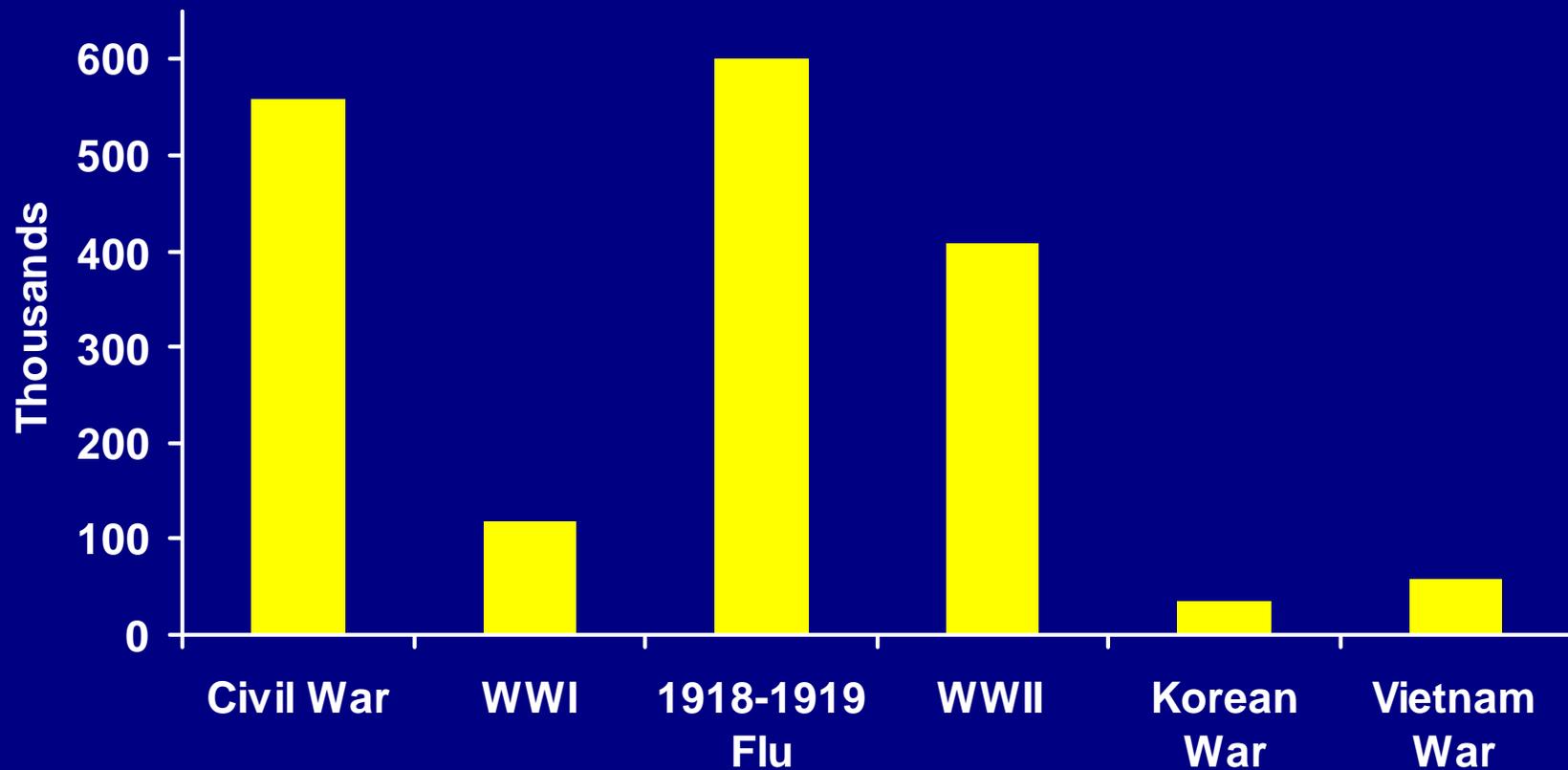
Months

Days

Features of a Pandemic

- There will be relatively little warning before pandemic strikes
- Impact of next pandemic could be severe

America's deaths from 1918 influenza pandemic were greater than the number of U.S. servicemen killed in any war



Impact on Maryland of a Moderate and Severe Influenza Pandemic*

Characteristic	Moderate (1957-like)	Severe (1918-like)
Illness	1,667,400 (30%)	1,667,400 (30%)
Outpatient Care	833,700	833,700
Hospitalization	16,000	183,400
Death	3,900	35,300

* Estimates based on extrapolation from past pandemics in the United States. Note that these estimates do not include the potential impact of interventions not available during the 20th century pandemics.

Features of a Pandemic

- There will be relatively little warning before pandemic strikes
- Impact of next pandemic could be severe
- Pandemic will pose significant threats to work force due to widespread absenteeism (up to 40%)

Features of a Pandemic

- Disruptions to essential services such as power, transportation, communications, supply chain, etc.
- Effect on individual communities will be relatively prolonged – 6 to 8 weeks – with subsequent waves



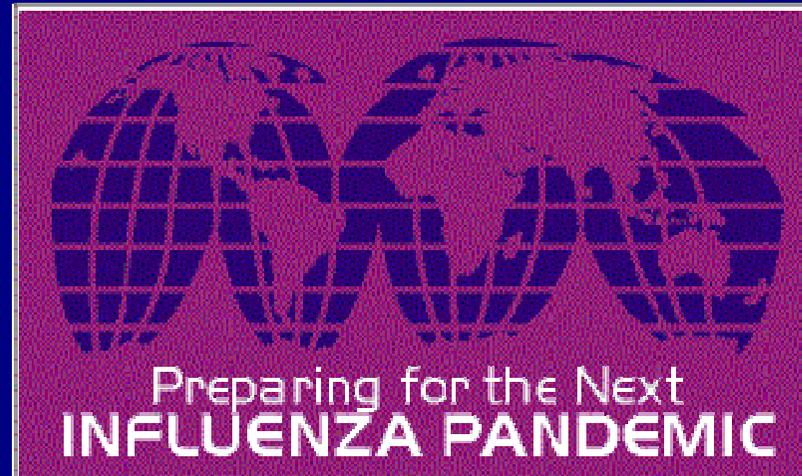
Features of a Pandemic

- Widespread nature of pandemic will prevent shifting of resources and will require need for community self-sufficiency
- Effective preventive and therapeutic measures (vaccines and antiviral agents) will likely be in short supply

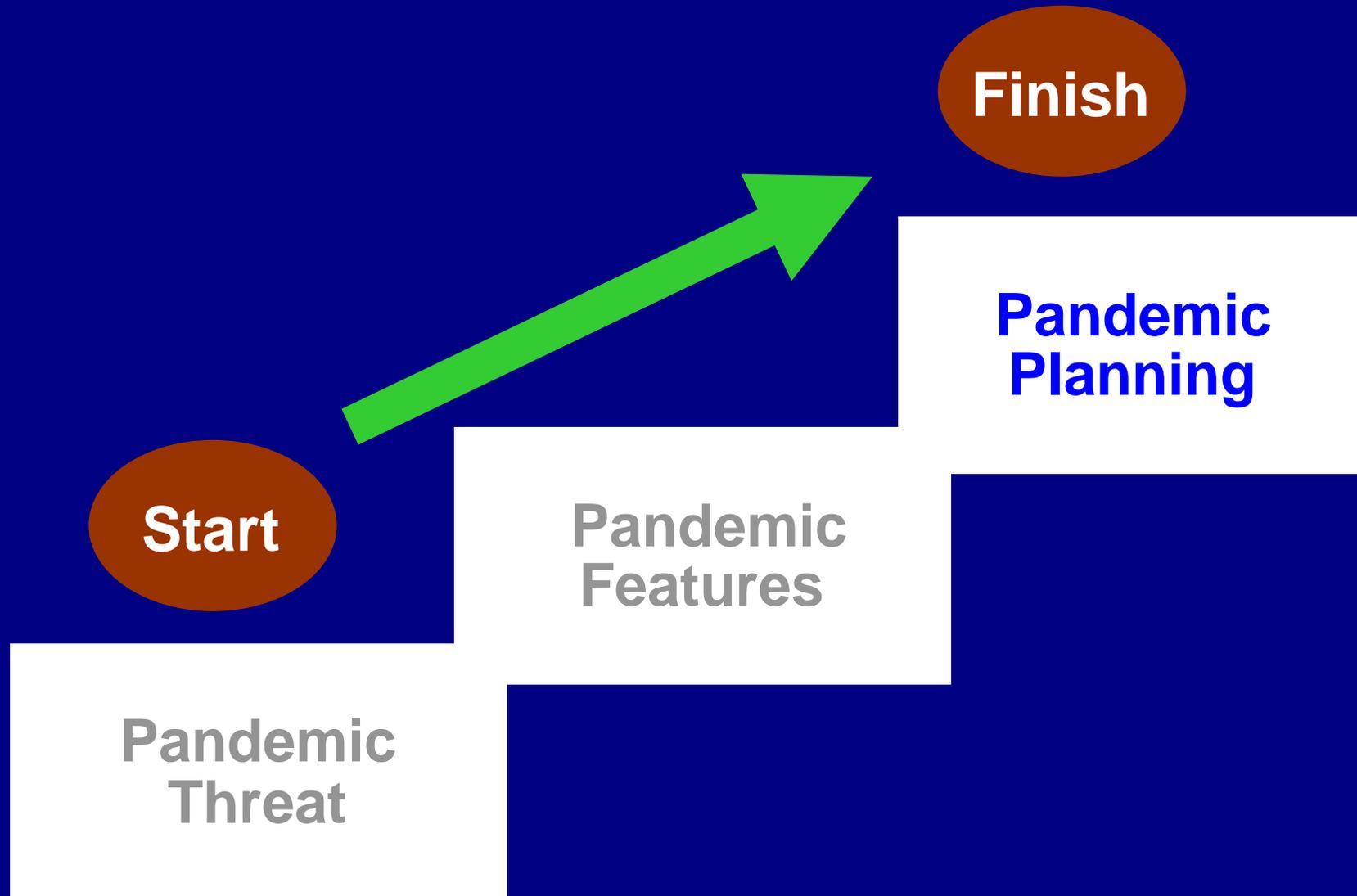


Pandemic Influenza

- Inevitable
- Sudden
- Widespread
- Prolonged
- Disruptive
- Potentially severe

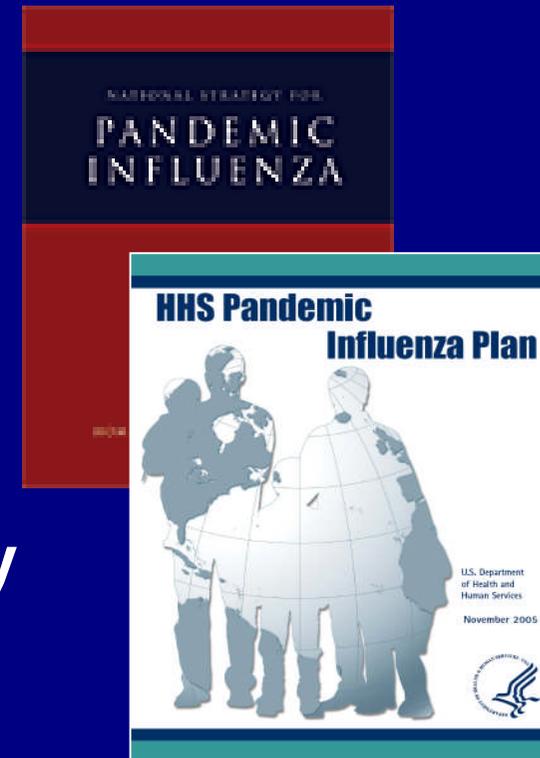


Outline of Presentation



National Planning

- U.S. Pandemic Influenza Plan released in November 2005
- Implementation Plan released in May 2006
- President charges HHS Secretary to hold pandemic influenza summit in every state
- www.pandemicflu.gov



Maryland State Planning

- Initiated formal planning for pandemic in 1999
- Developed and tested Pandemic Influenza Plan
- Held statewide summit in February 2006
- Embarked on educational outreach
- Produced new website at flu.maryland.gov

Citizen Alerts Maryland.gov State Agencies The 5 Pillars Online Services Phone Directory

Robert L. Ehrlich, Jr. Governor Michael S. Steele Lt. Governor

MARYLAND

Maryland Flu Preparedness

Pandemic Update
PHASE 3

There is not a flu pandemic in Maryland or in the United States.
[More info on phases](#)

- Find a Flu Shot
- Frequently Asked Questions
- Seasonal Flu Information

Ask Dr. Gourdine
"If you have a question, see the Frequently Asked Questions on the left or submit your own."

Flu Prevention Measures

- Wash your hands frequently Especially before meals
- Keep hands away from the mouth, nose and eyes
- Cough into a tissue or sleeve

Control Measures in a Pandemic

- Vaccine
- Antiviral agents
- Disease containment measures



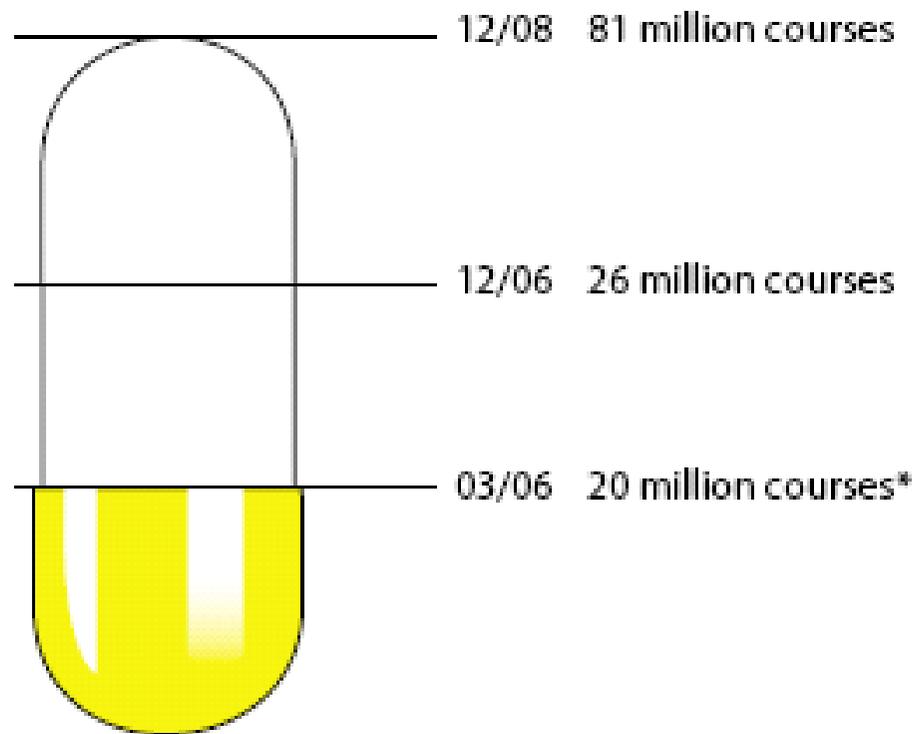
Pandemic Vaccine

- **None presently available**
 - **Cannot predict pandemic strain**
 - **Cannot stockpile**
- **Once available, shortages likely**
 - **Limited manufacturing capacity**
 - **Antiquated (slow) production technology**
- **Once produced, efficacy of vaccine is uncertain**

Antiviral Agents

- Used for both treatment (5 days) and prevention (6 - 8 weeks) but widespread preventive use not practical
- Limited supply and production capacity
- Resistance may develop
- Dosage and duration of treatment vary from strain to strain
- Time to treatment is critical

Antiviral Purchases



* a course is the number of doses needed to treat one person.

The U.S. long-term goal is to stockpile enough antivirals to treat 75 million people or 25% of the U.S. population

Disease Containment Measures

- Isolation of sick people
- Quarantine of exposed, well people
- Infection Control
 - Hand washing
 - Respiratory hygiene/cough etiquette
 - Masks
 - Stay home if ill
- Measures to increase “social distance” such as canceling mass gatherings, closing schools
- Travel advisories and restrictions

Implications of Control Measures

- Support needed for people who are isolated or quarantined
- Limitations on travel due to restrictions and advisories
- Limitations on public gatherings
- Changes in the workplace to avoid disease
- Worker absenteeism due to school closures
- Vaccine initially limited to priority groups
- Antivirals reserved primarily for treatment

Individual Planning

- **Be prepared: maintain a supply of water, food, prescribed medications, and other necessities**

- **Stay healthy**
 - Wash hands
 - Cover coughs and sneezes
 - Stay home if sick
 - Get the flu vaccine

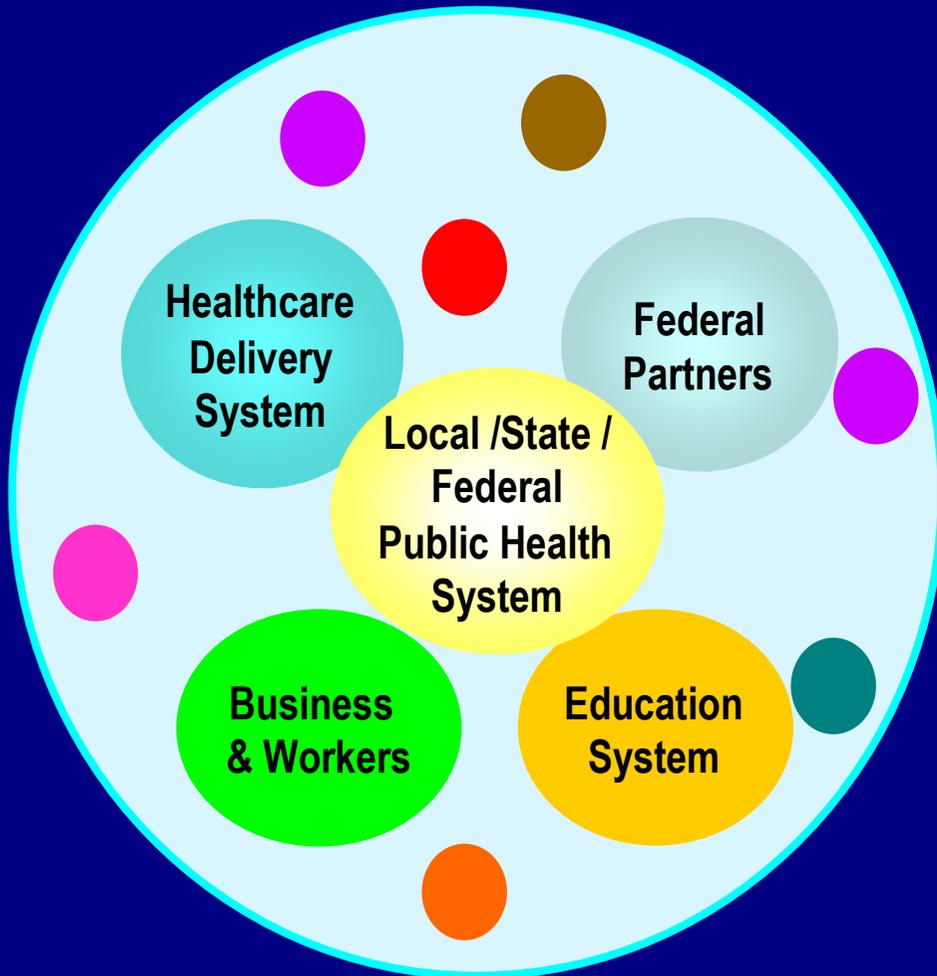
- **Stay informed**
 - www.flu.maryland.gov
 - www.pandemicflu.gov
 - Public health officials and health care providers
 - Local and national media



Organizational Planning

- **How will your organization maintain essential functions in face of widespread absenteeism (e.g., up to 40% of staff for 6 to 8 weeks)?**
- **How will your organization cope with disruptions to the supply chain of critical products and services?**

“Pan-Societal” Response Required



Multi-sector Integration

- Local – State – Federal
- Domestic – International
- Public – Private
- Animal – Human
- Health – Business
Education – Utilities
Transportation – Law
All Sectors of Society

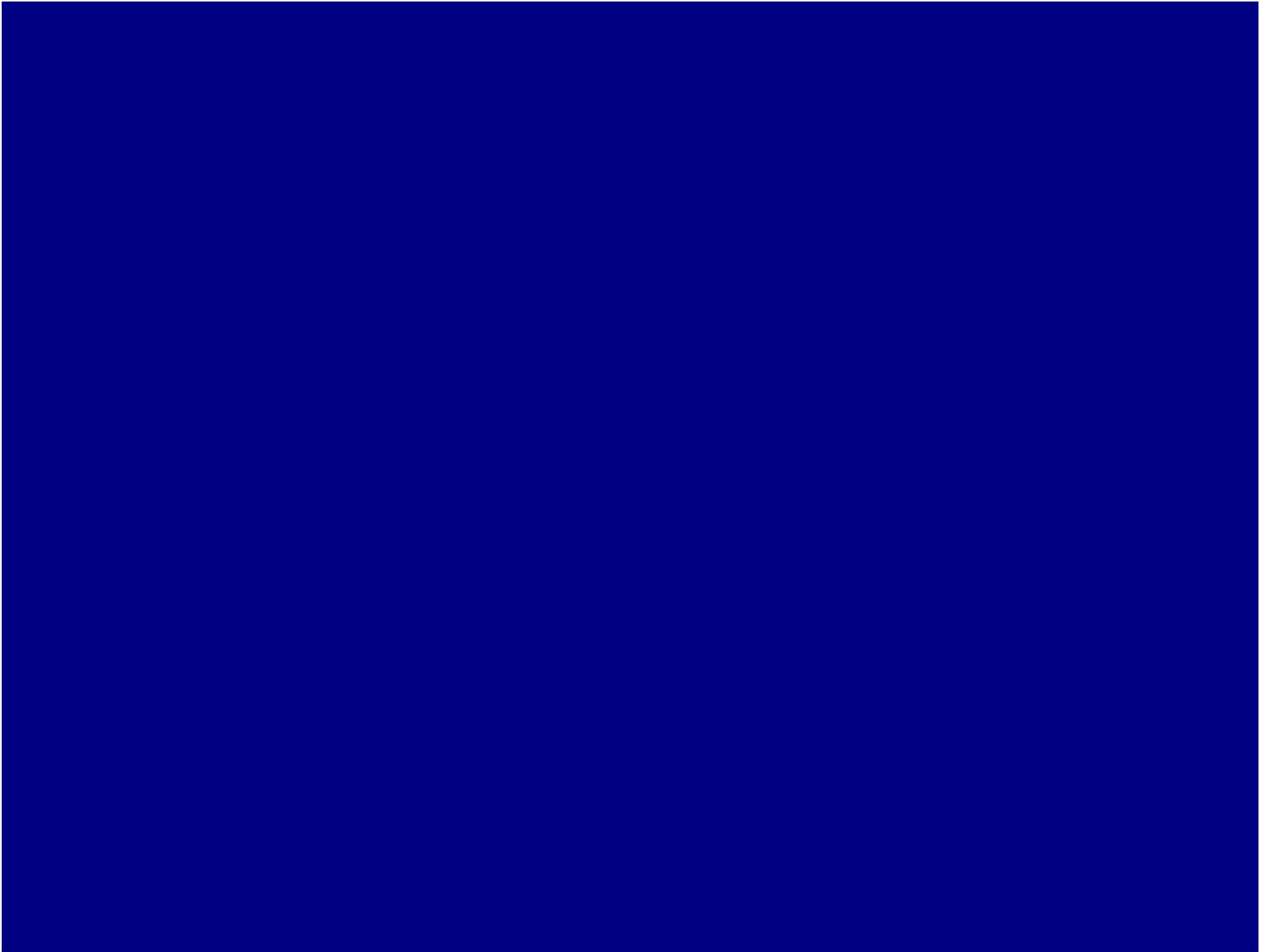
“Pandemic planning must be on the agenda of every school board, manufacturing plant, investment firm, mortuary, state legislature, and food distributor in the United States and beyond.”

*Dr. Michael T. Osterholm
Director, CIDRAP*



Conclusion

- Threat of another influenza pandemic is real
- Pandemic influenza is unlike any other public health emergency or natural disaster
- Advanced planning is critical
- Preparing for an influenza pandemic requires coordinated action at all levels of government – federal, state, local – and all sectors of society, including businesses, schools, medical community and others



Maryland State Planning

Maryland uses several methods to detect for signs of a future pandemic:

- **Syndromic surveillance collects information about illnesses in Maryland emergency room patients**
- **Sentinel health care providers report number of influenza-like illnesses they diagnose**
- **Hospitals report health care workers hospitalized with pneumonia**



Maryland State Planning

- Hospitals report hospitalizations and deaths in children who test positive for influenza
- Clinical labs report to DHMH lab evidence of influenza
- DHMH lab tests for various influenza strains, including H5N1
- Maryland shares information with other regional and national public health partners to monitor influenza activity during normal influenza season

