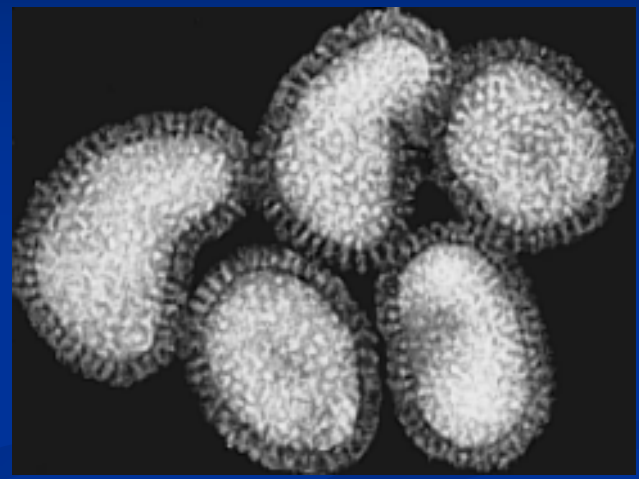
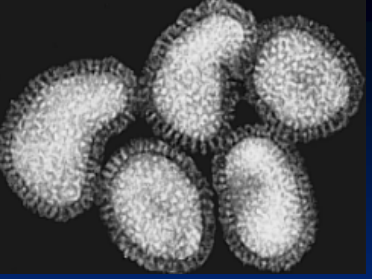
II. Conveying the Facts

Topics

- About Influenza
- Definitions
  - Seasonal Influenza
  - Pandemic Influenza
  - Avian Influenza (AI)
- Current Threat



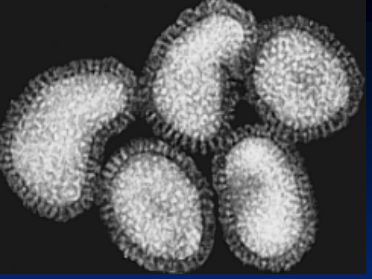
Credit: L. Stammard, 1995



About Influenza

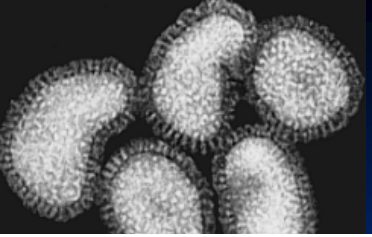
- Viral illness – types A, B and C
  - Incubation period* = 1-2 days
  - Abrupt onset fever, chills, muscle aches (myalgia), headache, followed by cough, sore throat, nasal congestion
  - 5-6 days restricted activity, 3 days lost from school or work

* Incubation period = time from infection to onset of symptoms

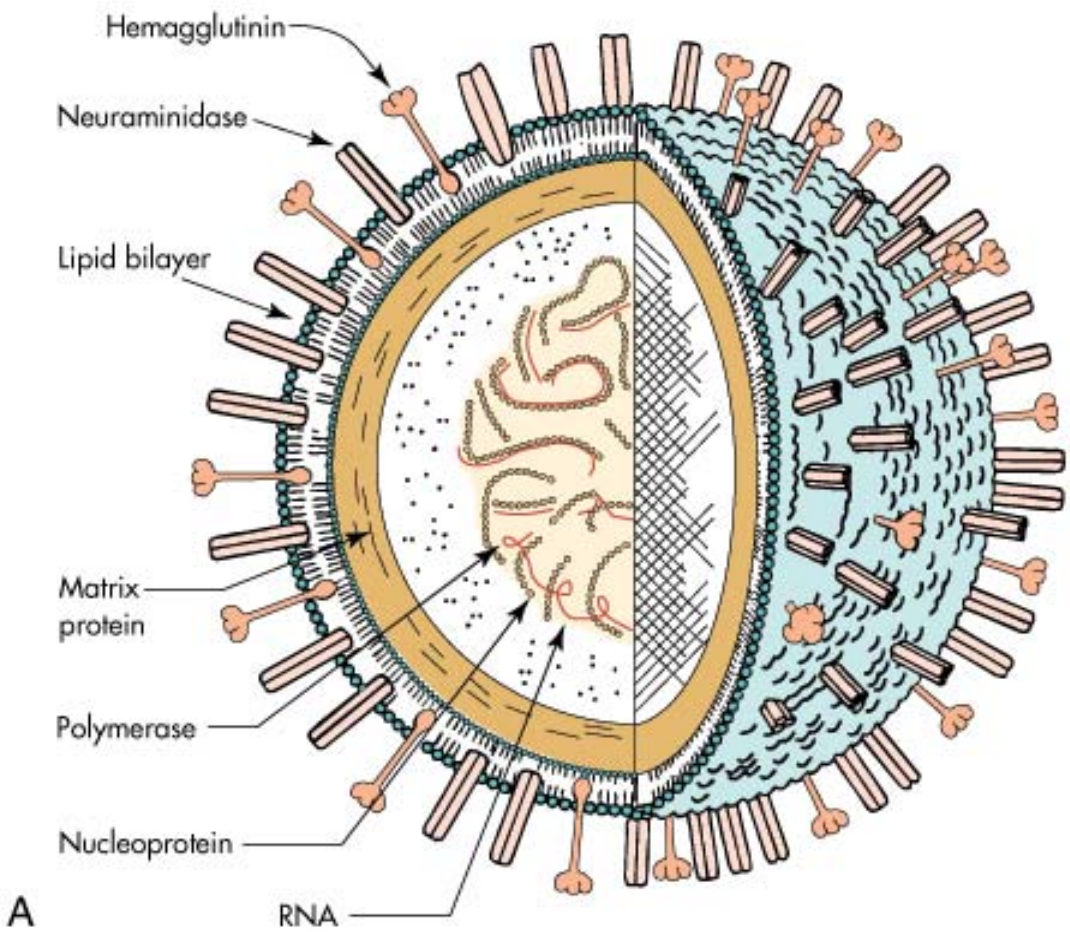


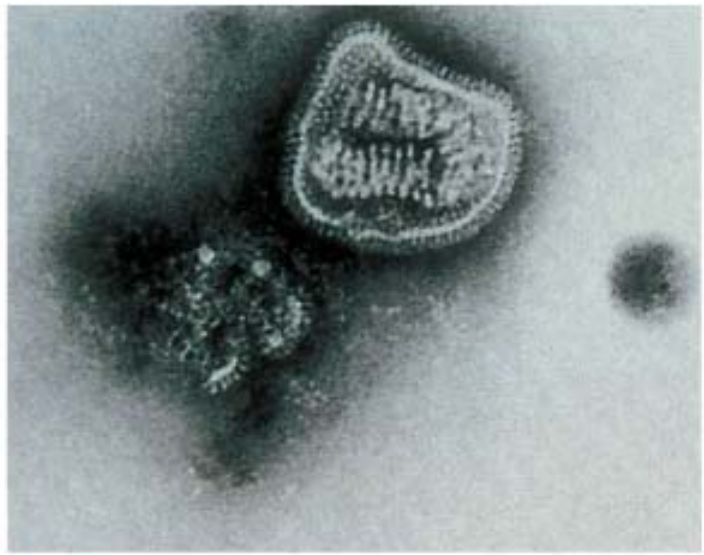
About Influenza

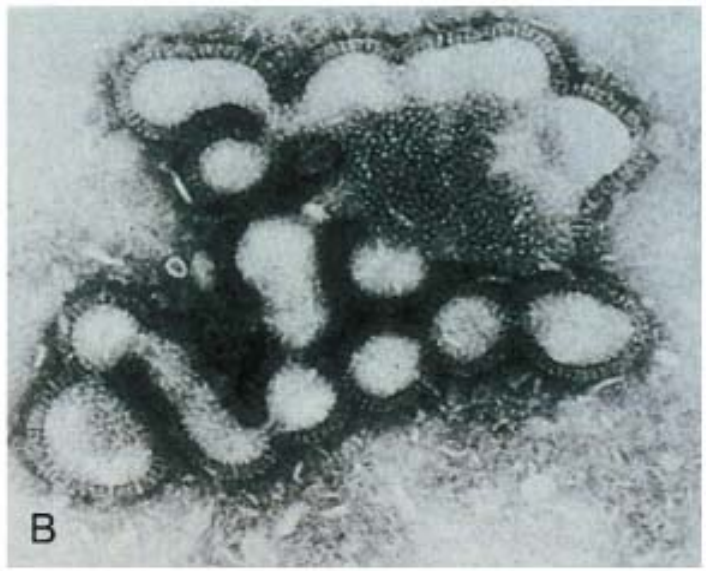
- Highly transmissible from person-to-person as droplets (5-10 μm)
  - Considered infectious from 1 day before to 5 days after onset
  - Peak viral shedding is from just before to 24-48 hrs after illness onset
  - Viral shedding lasts longer in children and immunocompromised



Influenza Virion



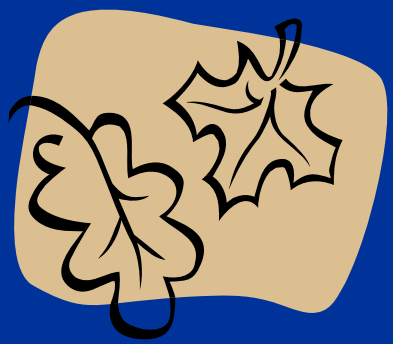


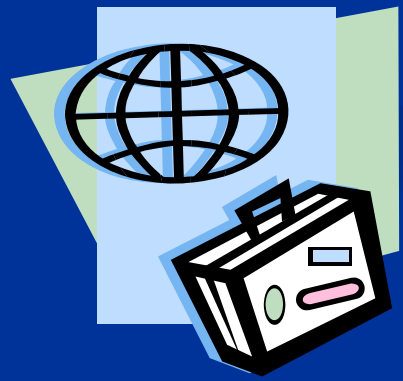


About Influenza: How the Virus Changes

- Influenza viruses are prone to genetic change
- Antigenic drift
  - Progressive, smaller changes that allow virus to continue to spread
  - Reason vaccines need to change from year-to-year
- Antigenic shift
  - Appearance of new, very different virus
  - People have not been exposed and immune system doesn't recognize virus or provide protection

Definitions: Seasonal, Pandemic, & Avian (Bird) Influenza



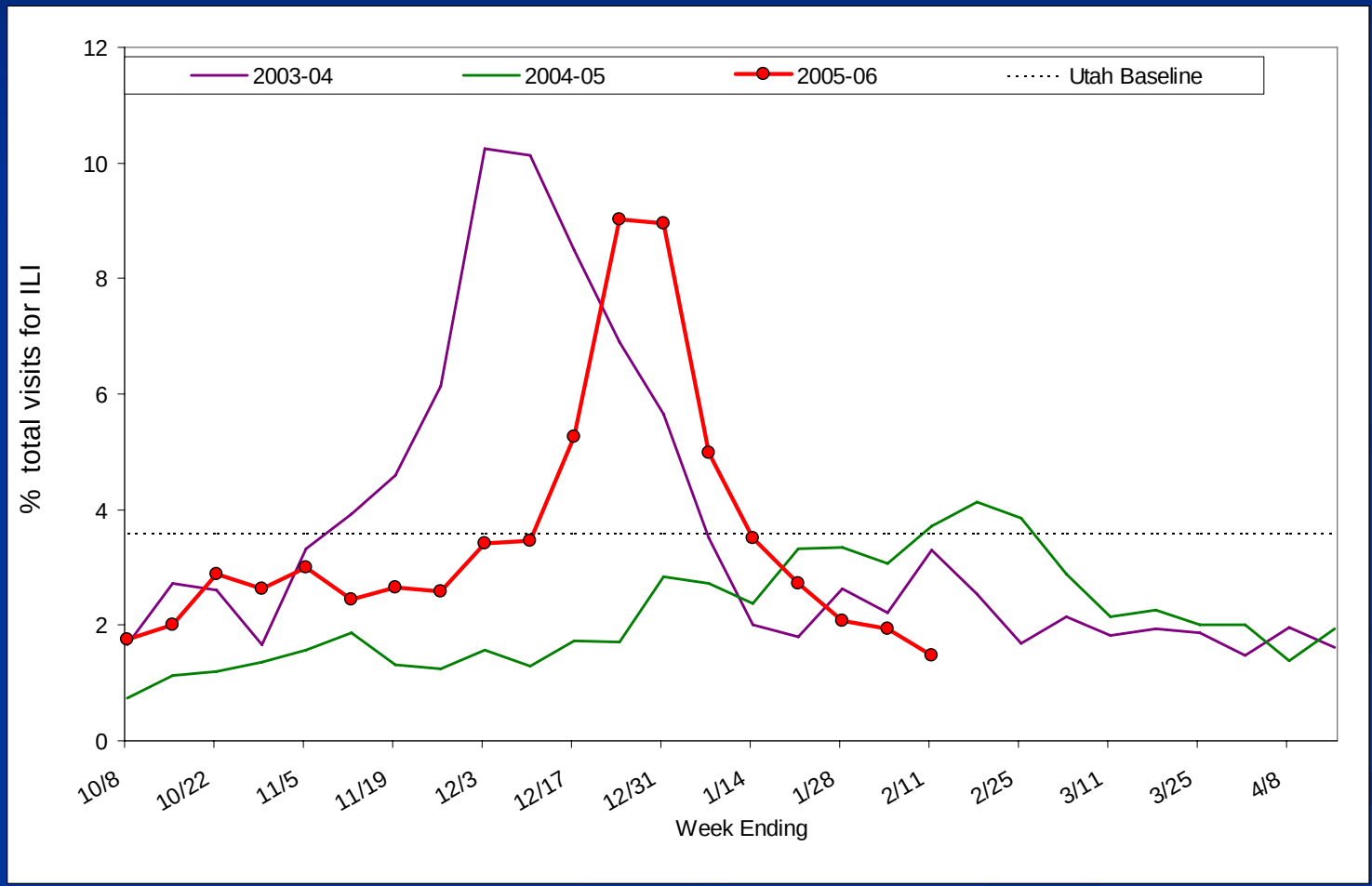


What is Seasonal Influenza?

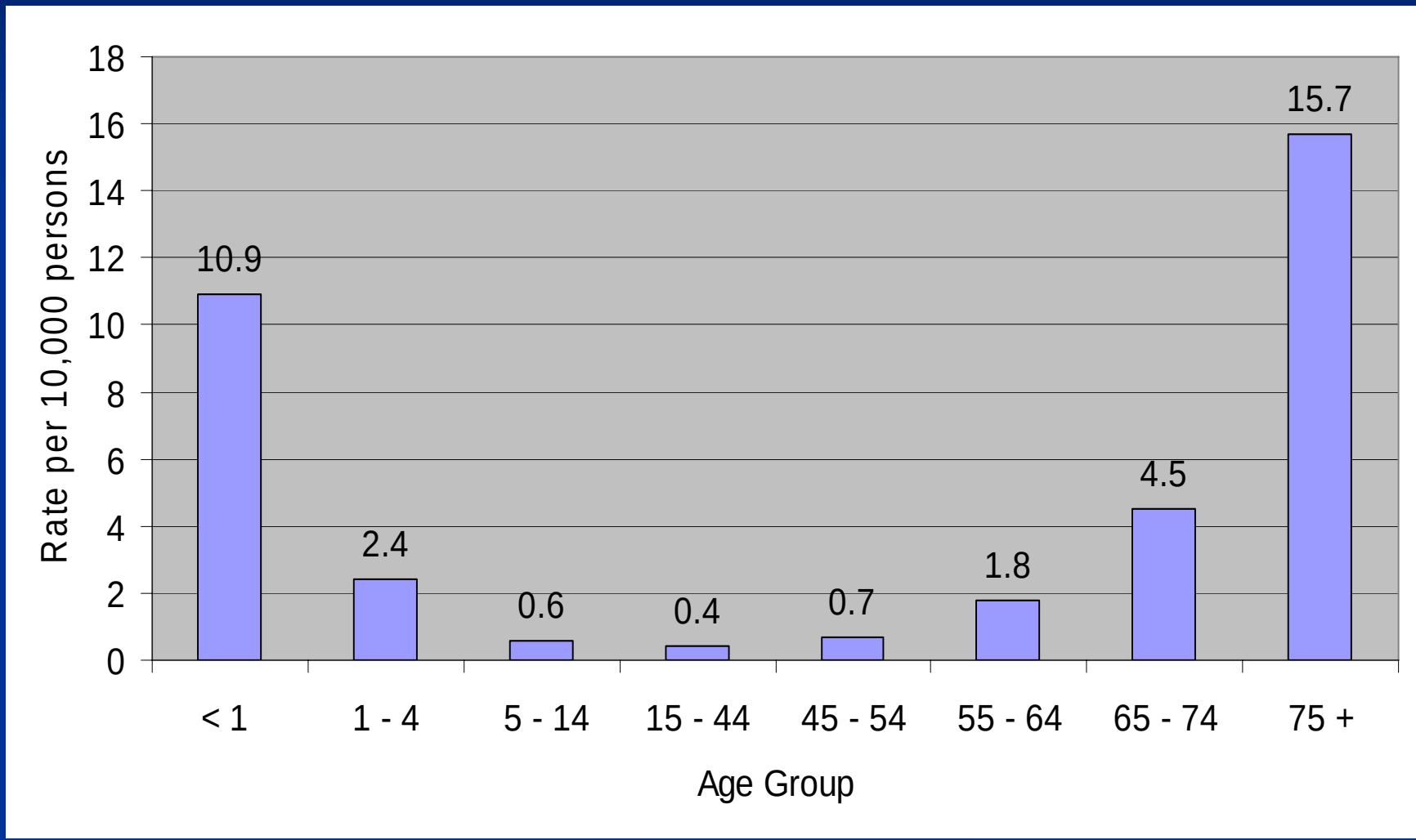
- "Annual" seasonal epidemics
  - Attack rates average 5-20%
  - Estimated 20-40,000 deaths in U.S. annually
  - Greatest effect on very young and older adults
  - Result of antigenic "drift"
    - Ongoing changes of influenza viruses that allow people to be infected more than once

Percentage of Visits for Influenza-like illness (ILI) Reported by Sentinel Providers

Utah 2003-4, 2004-5 and 2005-06 seasons



Influenza-associated Hospitalizations Utah 2005-2006*



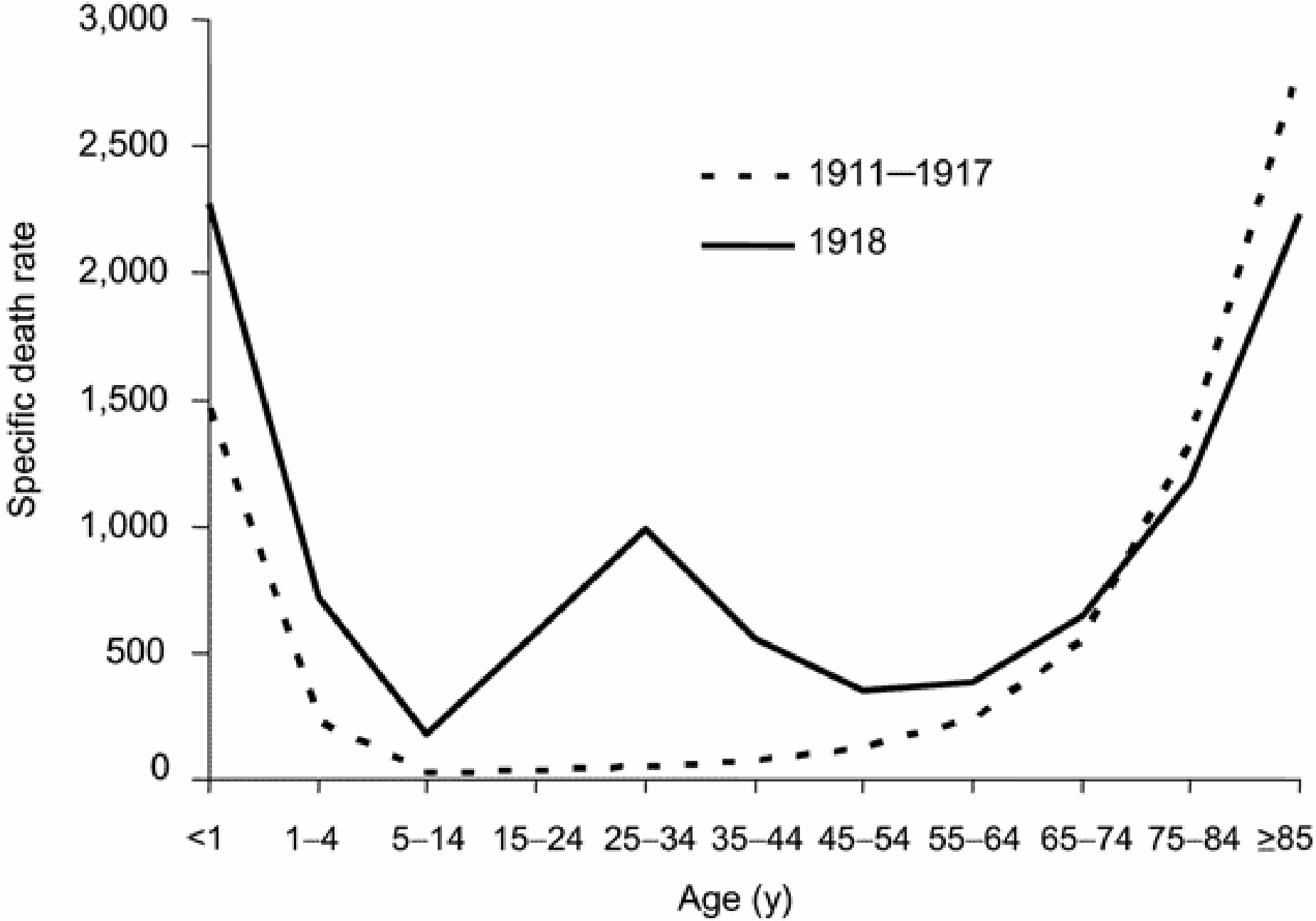
•Date as of March 1, 2006

What is Pandemic Influenza?

- Global outbreak of influenza
- Appearance of new type of influenza A virus to which people have no immunity
- Can cause serious illness and spread rapidly from person to person worldwide.
- Past pandemics have caused high levels of illness, death, social disruption and economic loss.

Pandemic Influenza in the 20th Century

Pandemic	Strain	Est. Deaths US	Est. Deaths Worldwide
Spanish (1918)	H1N1	>500,000	20-100 million
Asian (1957)	H2N2	~70,000	> 1 million
Hong Kong (1968)	H3N2	~34,000	> 1 million


3,000
2,500
2,000
1,500
1,000
500
0
Specific death rate
1911—1917
1918
<1
1–4
5–14
15–24
25–34
35–44
45–54
55–64
65–74
75–84
≥85
Age (y)

Grand Valley Times, October 18, 1918

Moab, Schools Closed

Three Cases Make Their Appearance; Drastic Steps Taken to Check Further Spread

TO HEALTH OFFICERS.

You are hereby notified that in order to restrict the spread of influenza the state board of health has adopted the following order to be effective on and after October 10:

Whenever the existence of a case of influenza is discovered in any town or school district, the following institutions and meetings shall be immediately closed and discontinued until further notice:

Public and private schools, Sunday schools, colleges, business

Coughs and Sneezes Spread Diseases

As Dangerous as Poison Gas Shells

Pandemic Influenza in Utah

Video of 1918 flu in Utah to play here.

ViVideo: "1918 Influenza" –The American Experience

Video 2

What is Avian Influenza?
"Bird InFluenza"

- Many varieties of influenza occur in birds
  - All birds are susceptible, but to varying degrees
  - Ranges from mild illness to "highly pathogenic"
  - Most commonly found in wild waterfowl
  - Typically more severe in domestic poultry
- Most avian influenza viruses don't infect humans

How is it spread among birds?

- Direct contact between healthy and infected birds
- Infected fecal matter (or anything carrying or contaminated with it)
- Initial infection of domestic poultry often from wild birds

Highly Pathogenic Avian Influenza in 20th Century (U.S.)

- **1924 – "Fowl Plague"**
  - Affected live bird markets in the Northeastern U.S.
- **1983 –**
  - Destruction of 17 million birds in PA
- **2004 –**
  - Quickly contained and eradicated in TX

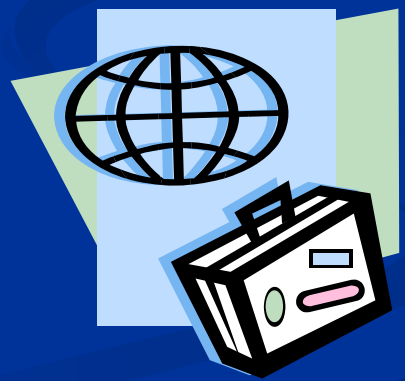
Avian Influenza in Utah

- 1995 – An AI outbreak occurred in Utah when migrating waterfowl came in contact with infected poultry near Mexico City. The waterfowl then made their way to a central Utah lake located near a turkey farm.
  - Two million Turkeys were affected
  - 25% of them died
  - A vaccine was administered to millions of other turkeys.

Avian Influenza in Utah

- Currently, highly pathogenic influenza is not found in the Utah bird population
- No cases of the dangerous avian influenza A (H5N1) have occurred in the US -- Yet
- The consequences of an outbreak would be severe to an industry that generates $100 million a year and employs hundreds.

Current Threat:
Avian Influenza (Bird)
Pandemic Influenza (Human)



Avian Influenza H5N1 2003 - present

- 1996-97 – H5N1 outbreak in Hong Kong
- 2003- poultry outbreaks in China, Thailand, Korea, others unreported
  - human cases in Hong Kong (travel to China) & Viet Nam
- 2004 – poultry in several SE Asian nations
  - Humans in Thailand and Viet Nam
- 2005
  - Ongoing poultry outbreaks & human infections in 5 nations
  - 1st possible human-to-human transmission
  - Wild birds found infected – die-offs and asymptomatic carriage
  - Spread to Eurasia
- 2006 - Rapid spread to Africa and Europe

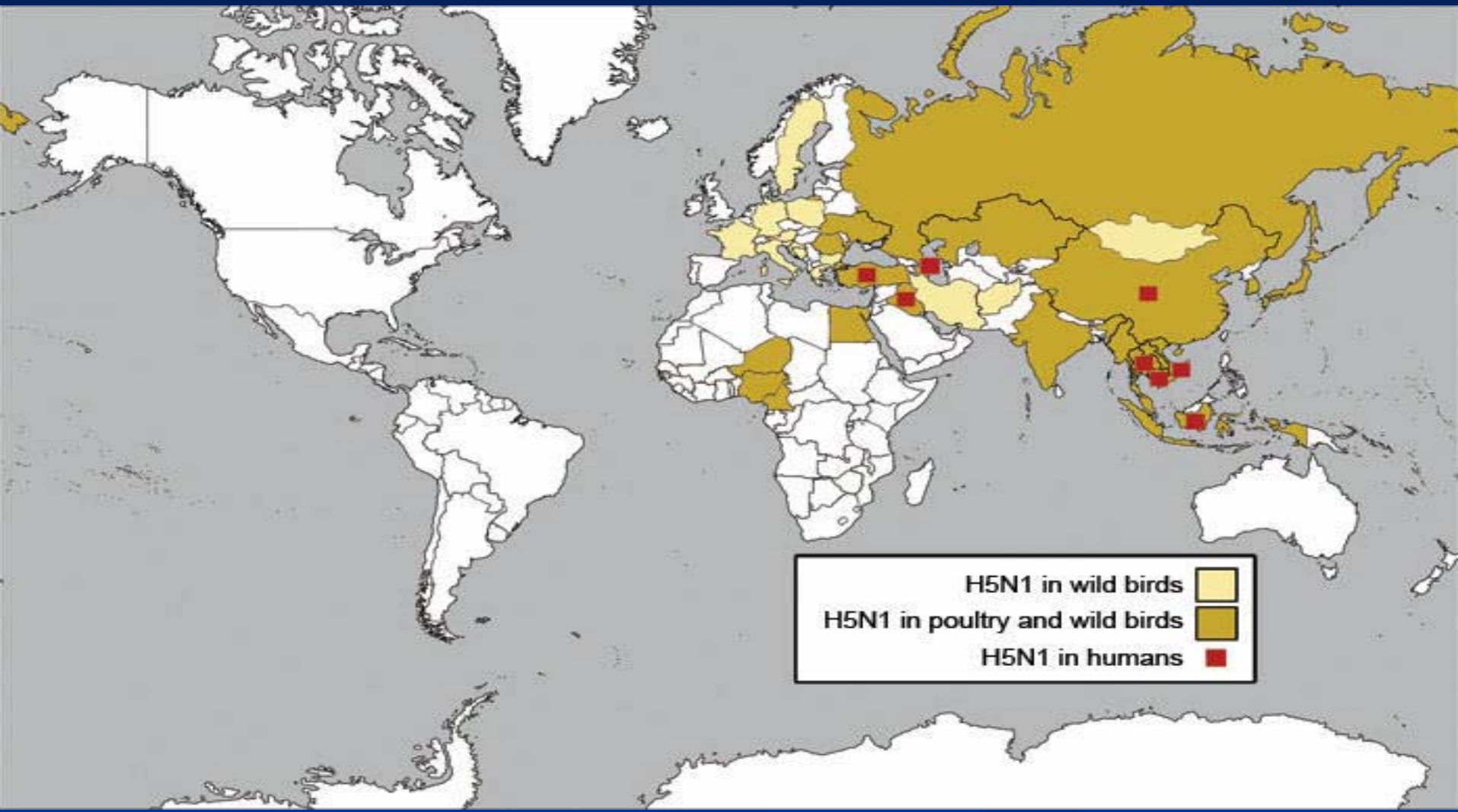
Avian Influenza (H5N1) 2003-2006

- Poultry and wild bird outbreaks in multiple nations in Asia, Africa, Europe
  - Poultry outbreaks in 25 nations and in wild birds in an additional 15+ nations
  - Death or destruction of well over 140 million birds
- Spread appears to occur both by migratory birds and shipment of poultry and related products

Poultry outbreaks as of March 20, 2005, including current and controlled outbreaks

Nations With Confirmed Cases H5N1 Avian Influenza

(March 20, 2006)



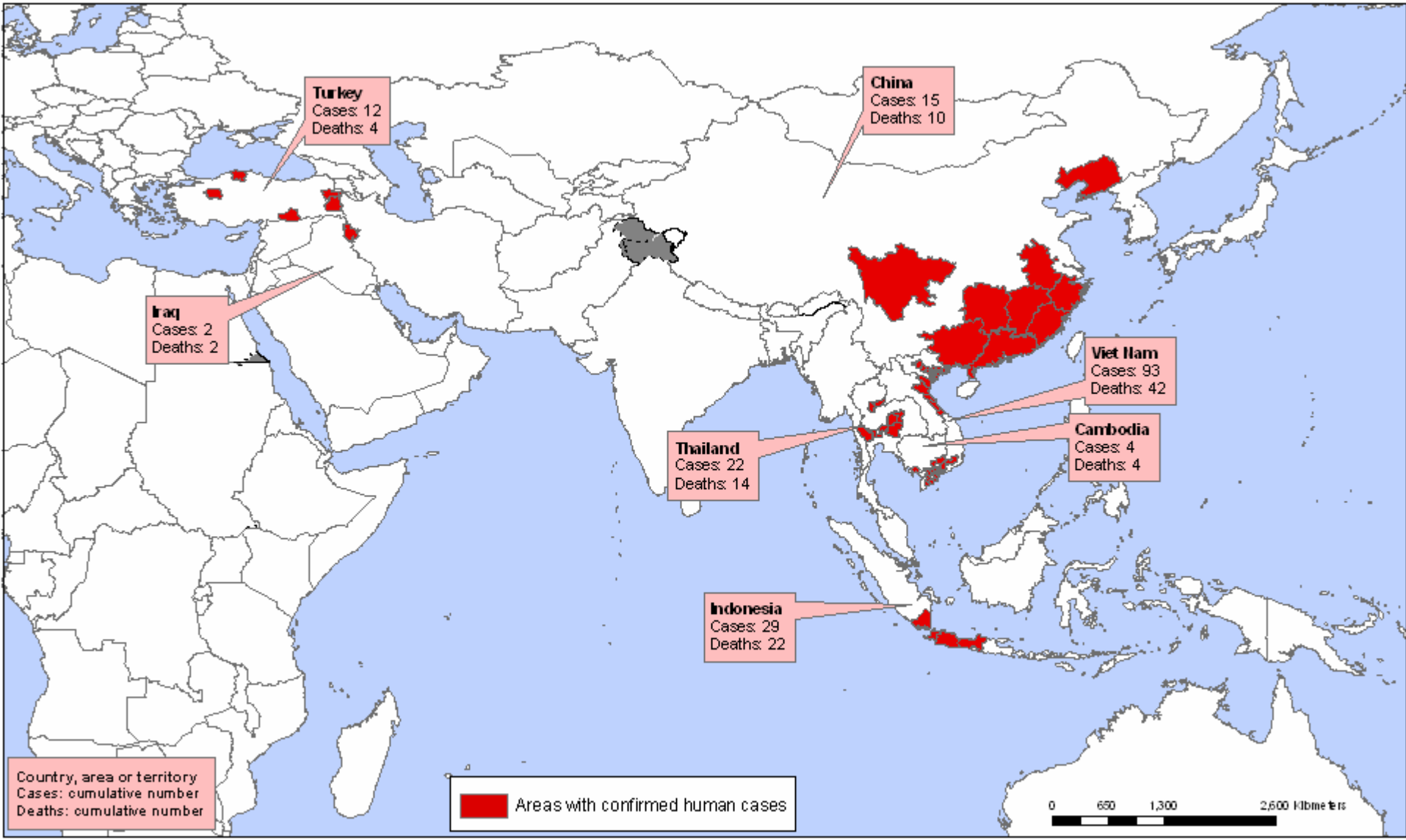
Avian Influenza (H5N1) Human disease 2003-2006

- Human cases – 184 cases with 103 deaths
  - Vietnam (93), Indonesia (29), Thailand (22), China (15), Turkey (12), Azerbaijan (7), Cambodia (4), Iraq (2)
  - In 2006 – 40 cases and 27 deaths in five countries
- How people get it
  - Direct contact with poultry
  - Not spread effectively person-to-person at this time
  - No risk from appropriately cooked poultry products

Human cases are from Dec. 26, 2003 through March 21, 2006

Affected areas with confirmed human cases of H5N1 avian influenza since 2003

Status as of 16 March 2006



World Health Organization

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: WHO / Map Production: Public Health Mapping and GIS
Communicable Diseases (CDS) World Health Organization

Avian Influenza (H5N1) The next pandemic?

- Have conditions been met for a pandemic?
  - Novel antigens – no human immunity - Yes
  - Human infection – Yes
  - Highly lethal - Yes
  - Effective person-to-person spread – Not yet

Avian Influenza (H5N1) The next pandemic?

- Will Avian Influenza H5N1 cause a pandemic?
  - Widespread disease in birds
    - Rapid spread to Europe and Africa during 2006
  - Ongoing human infections

- We don't know if this will happen or not
  - To date – absence of effective human-to-human spread

Another pandemic will occur someday