

Avian Influenza A(H5N1)

Dr N Kumara Rai

























Director, Communicable Diseases

World Health Organization, South-East Asia Regional Office

Influenza

- Ancient disease
- 28 pandemics
- Most devastating:
 - Spanish Flu: 1918: 40-50 Millions deaths
- Caused by influenza virus of types A, B or C
- Various subtypes of Type A virus based upon HA and NA surface antigens
- Host range includes humans and animals



Haemagglutinin subtypes			Neuraminidase subtypes		
H1		N1			
H2		N2			
H3		N3			
H4		N4			
H5		N5			
H6		N6			
H7		N7			
H8		N8			
H9		N9			
H10					
H11					
H12					
H13					
H14					
H15					

Subtypes of Influenza A Virus

- Many subtypes (H and N)
- 3 subtypes have caused human epidemics
 - H1N1
 - H2N2
 - H3N2
- Subtypes that usually infect birds but have caused infections in humans:
 - H5, H7 and H9

(Karl G Nicholson, et al Lancet 2003; 362: 1733-45)

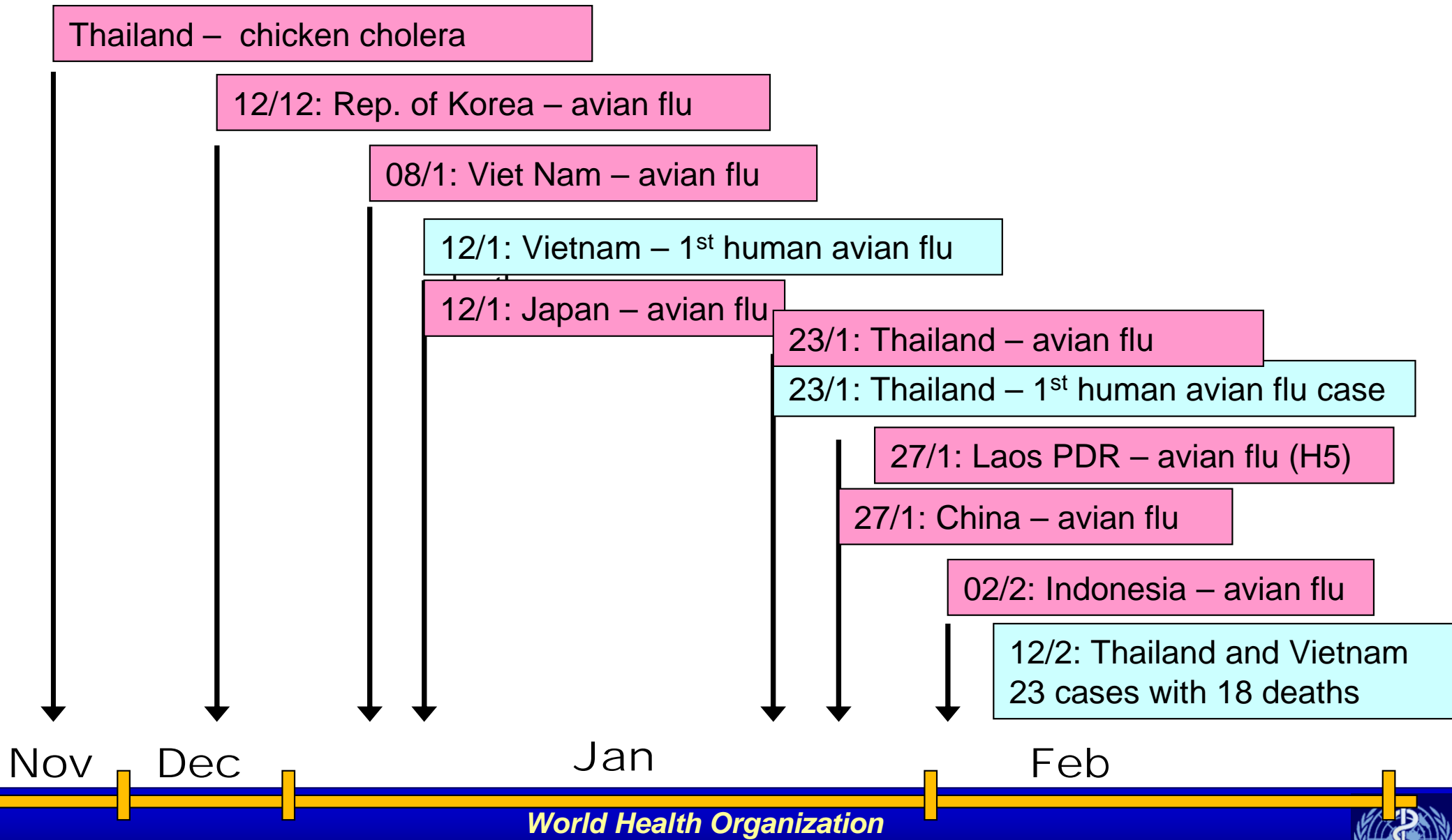
Recent Human Infections by Avian Influenza

Year	Place	Subtype	Cases	Deaths
1997	Hong Kong	H5N1	18	6
1999	Hong Kong	H9N2	2	0
2003	Hong Kong	H5N1	2	1
2003	Netherlands	H7N7	83	1
2003	Hong Kong	H9N2	1	0
2003-04*	Thailand & Vietnam	H5N1	27	20

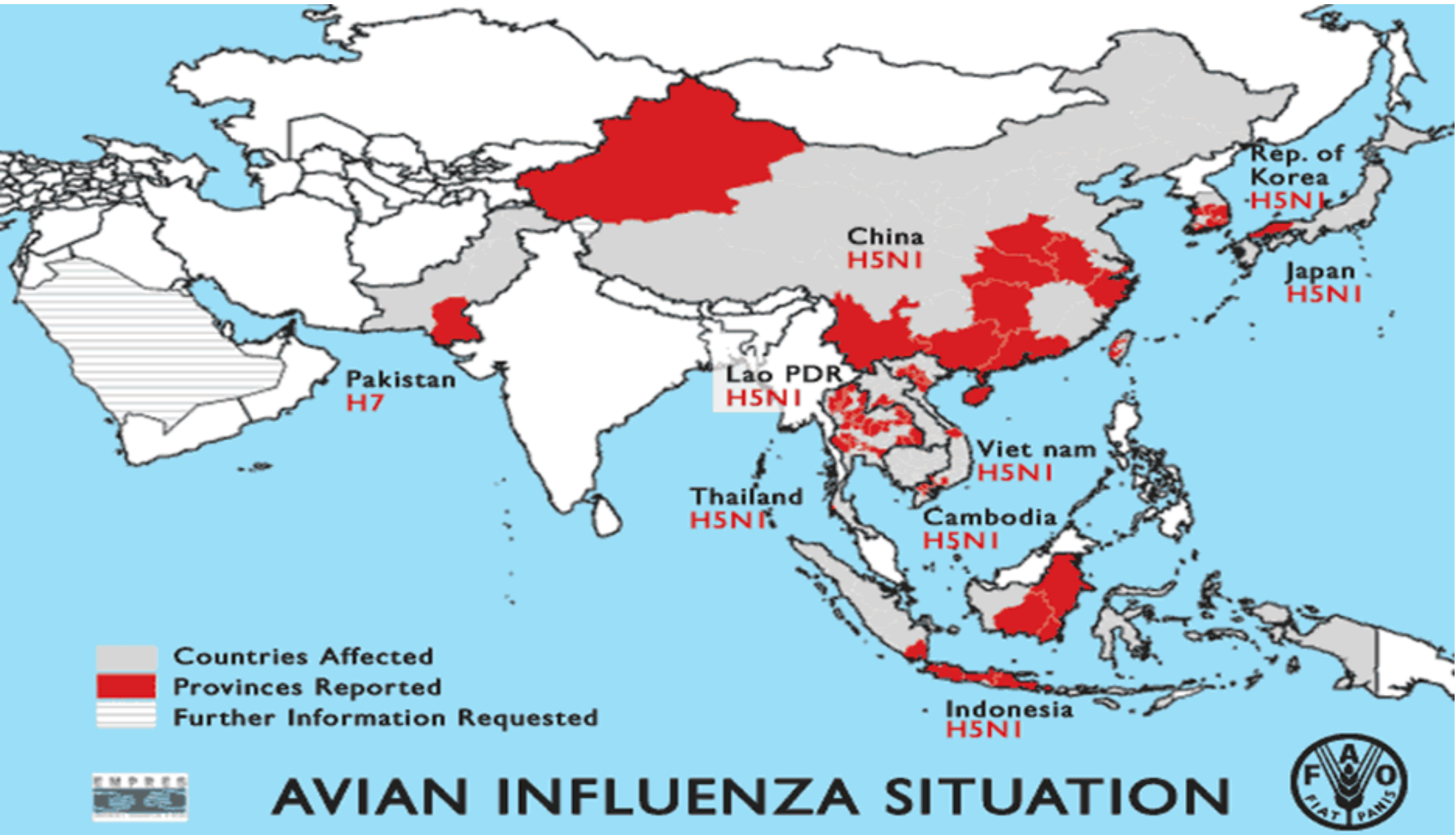
*Still evolving. Figures as on 14 February 2004



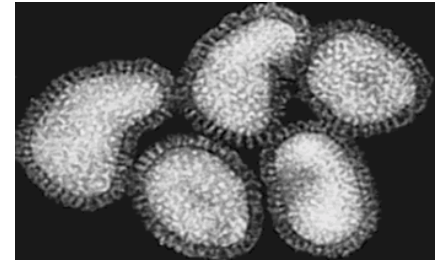
H5N1 Chronology



Current status of avian influenza



From birds to human



Migratory
water birds



Domestic birds

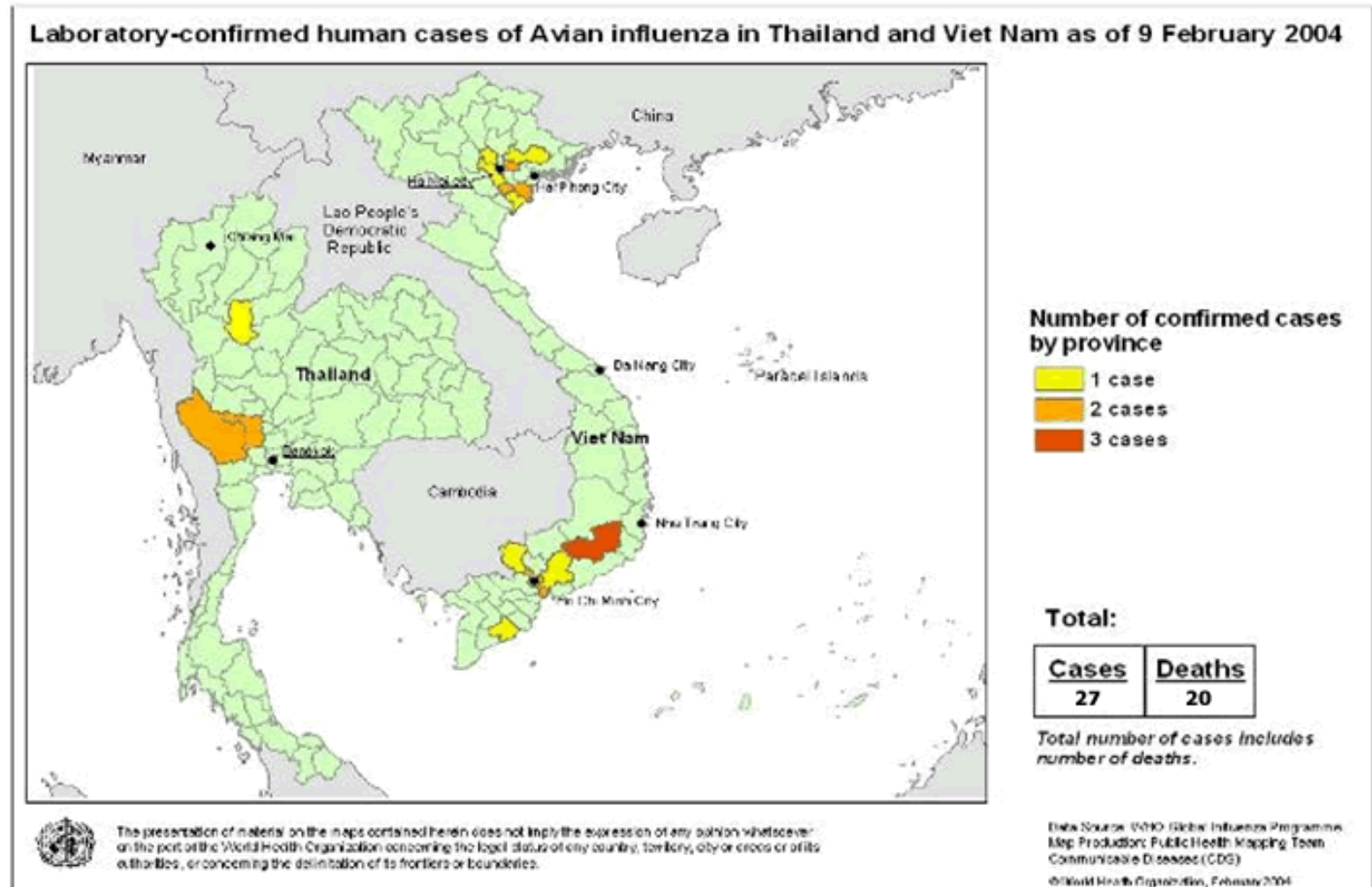


- Hong Kong 1997, H5N1
- HK, China 1999, H9N2
- Netherlands 2003, H7N7
- Hong Kong 2003, H5N1
- Thailand and Vietnam
- 2003-04; H5N1

Source: WHO/WPRO

Current Status: A(H5N1) human cases

- Viet Nam
- Thailand
- No SAARC country



- High fatality rate (74%); young age group (mean 6 years)

Human Avian Influenza (H5N1)

as on 14 February 2004

Country/ Territory	Total cases	Deaths
Thailand	8	6
Viet Nam	19	14
Total	27	20

Total number of cases includes number of deaths.

WHO reports only laboratory-confirmed cases.



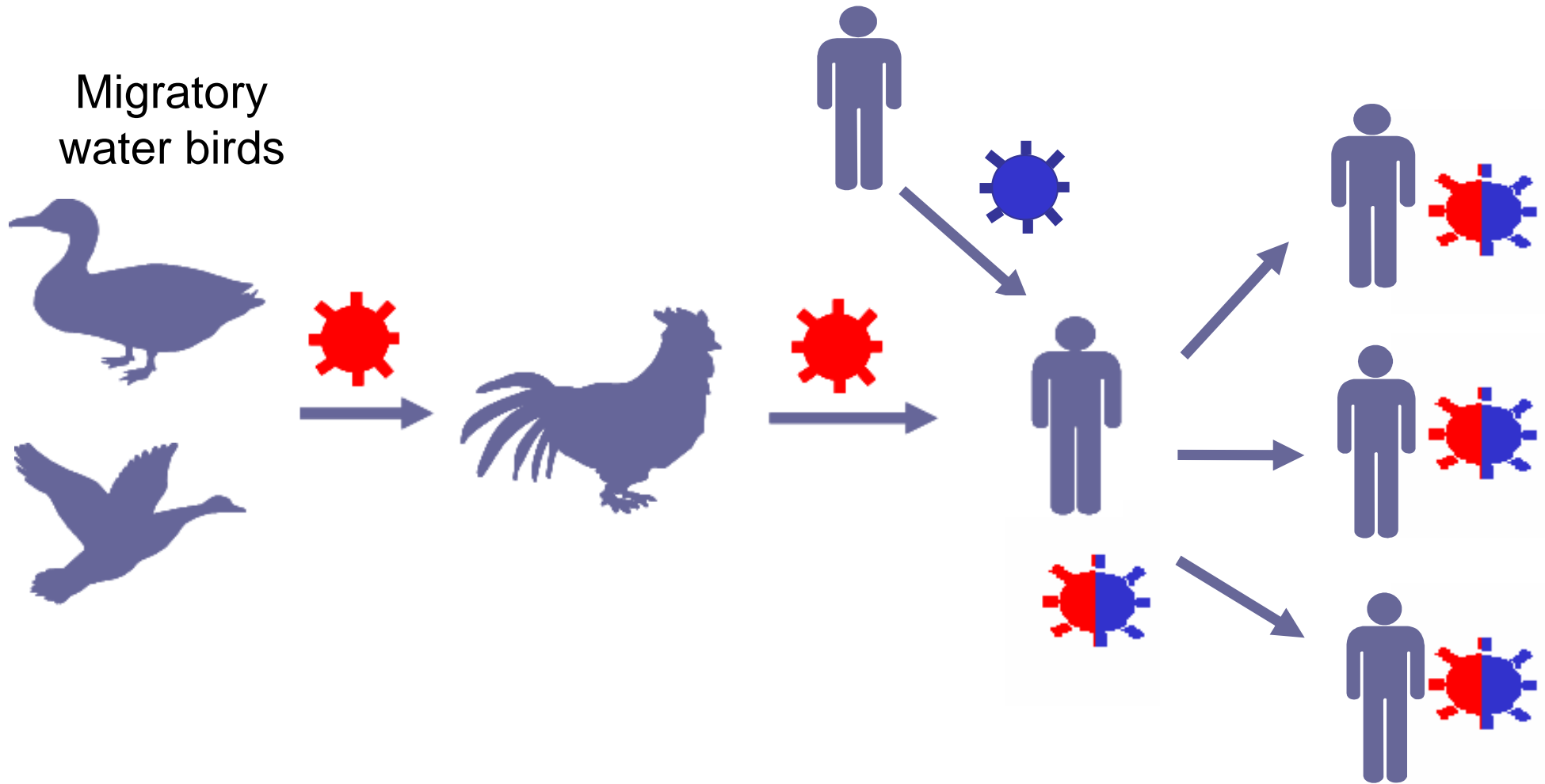
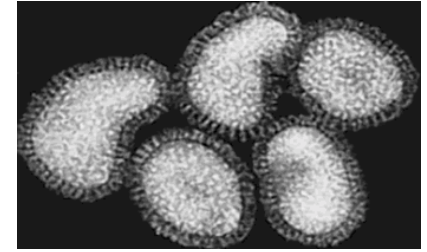
Why are we so concerned?

- Number of affected countries with avian influenza increasing
- Number of avian and human cases increasing
- Majority of human population has no immunity
- High case fatality rate
- Human influenza viruses are circulating in Asian countries

Increasing risk of human to human transmission with pandemic potential



Reassortment (in human)



Source: WHO/WPRO



Public health risk

- **Emergence of a new influenza virus**

- Highly pathogenic

- Rapid spread from person-to-person

- **Potential for a new influenza pandemic**

- 1918-19 “Spanish flu”

- Evidence for presence of avian genetic material



Prevention of human cases

- **Remove animal reservoir**
 - Control outbreaks by safe slaughter of poultry
 - Restrict movement of poultry from infected areas
- **Understand the extent of problem in humans**
 - Enhanced surveillance
 - Epidemiological investigations (human to human transmission)
 - Laboratory support
- **Reduce the risk of human infection from occupational exposure**
 - Protection of occupationally exposed persons
 - Infection control in health care settings



Capacity in SAARC countries

- **Infrastructure for surveillance, clinical care and laboratory support for various infectious diseases exist in most of the SAARC countries**
- **Surveillance for Influenza and other viral infections which have the potential to spread rapidly may require some strengthening based upon country-specific need assessment**



WHO Strategic Objectives

- Prevent a human pandemic of influenza
- Reduce human exposure to avian strains of influenza
- Provide technical assistance to countries
- Assist countries with pandemic preparedness planning



WHO Strategy

- **Risk reduction (avoid emergence of a new virus)**
 - Elimination of animal reservoir (FAO, OIE): culling, slaughter, vaccine
 - Protection and immunization of at risk individuals (e.g. cullers)

- **Strengthen surveillance**
 - Animals (FAO and OIE)
 - Humans (diagnostic tests, global reporting)

- **Improve pandemic preparedness**
 - A(H5N1) vaccine development
 - Access to antiviral drugs
 - Pandemic plan (national, international)



WHO partnership

- **FAO and OIE** (joint meeting, 3-4 Feb 2004, Rome)

- Animal health
- Food safety

- **Global Influenza Laboratory Network**

- Global surveillance
- Vaccine development
- Antiviral drug

- **Global Outbreak Alert and Response Network**

- Field teams (Viet Nam, Thailand, Cambodia, China, Bangladesh)
- Technical support

(CDC, USA; NIID, Japan; HPA, UK; EPIET, EU; NCEPH and FETP, Australia; Pasteur and Epicentre, France; Health Canada, Canada; RIVM, The Netherlands; ICCDRB, Bangladesh)

World Health Organization



Global Outbreak Alert & Response Network (GOARN)

- GOARN is a technical partnership, coordinated by WHO, to provide rapid multi-disciplinary support for outbreak response.
 - 11 January: WHO issued preliminary Alert to GOARN
 - 14 January: WHO requests assistance of GOARN partners to identify experts to support outbreak response in Viet Nam and potentially elsewhere.
- Field Teams: Cambodia, China, Thailand and Viet Nam



WHO support to countries

■ Technical guidelines

- Available on WHO Web site
 - situation updates (daily update, confirmed human cases)
 - advice (FAQ, fact sheets, recommendation to travellers)
 - technical (specimen collection, laboratory diagnosis, surveillance, clinical management, pandemic preparedness etc.)

■ On site expertise

- Field investigation
- Intersectoral collaboration
(health, agriculture)

■ Resource mobilisation

- Funding framework

■ Training

- Bangkok: 19-20 February 2004



Technical Guidelines

- Global Surveillance
- Case Management
- Laboratory testing
 - Clinical specimens storage, shipment, and biosafety
- Protection of slaughterhouse and farm workers



What governments and the international community should do

- **National Level**

- Intersectoral collaboration is essential
- Establish inter-ministerial task force
 - Ministry of Health
 - Ministry of Agriculture
 - Other Ministries
- Public awareness and media partnership

- **International Level**

- Transparent sharing of information between countries and with FAO, OIE and WHO
- Coordination between FAO, OIE and WHO
- Resource mobilization



The whole world is looking
towards Asia



By working together we can avert another pandemic..

Influenza Pandemics



1918: “Spanish Flu”

Upto 50 million deaths

A(H1N1)



1957: “Asian Flu”

1-4 million deaths

A(H2N2)



1968: “Hong Kong Flu”

1-4 million deaths

A(H3N2)

**Prevented by
global efforts**

Current outbreak

18 deaths

A(H5N1)