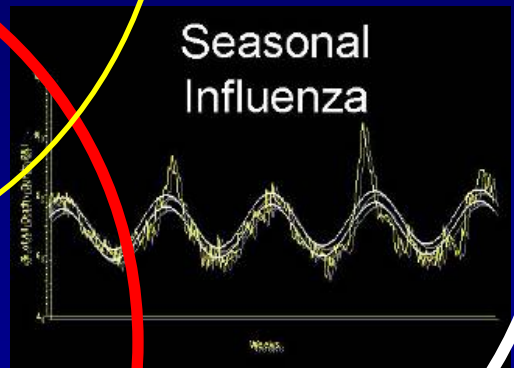
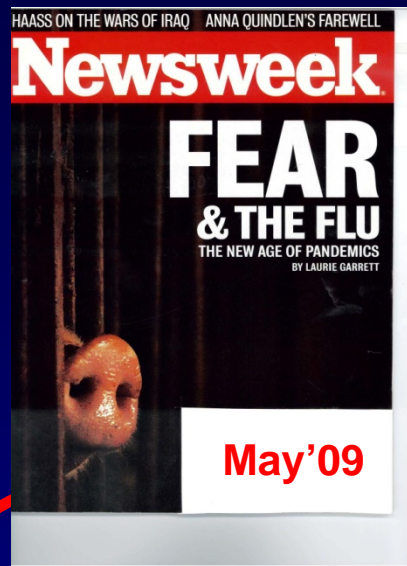


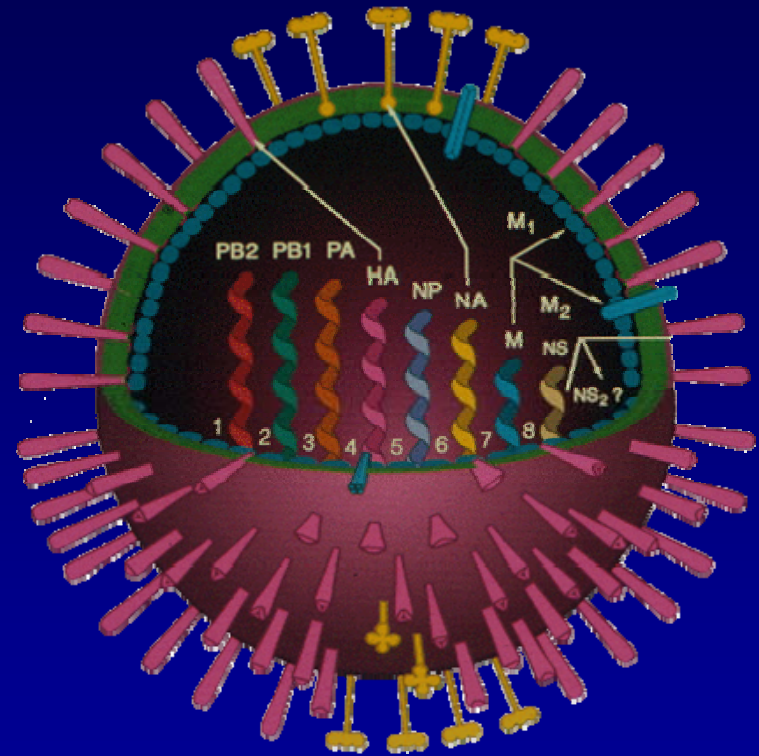
Pandemic (H1N1) influenza clinical features & management

Dr Randeep Guleria
Professor
Department of Medicine
A.I.I.M.S.

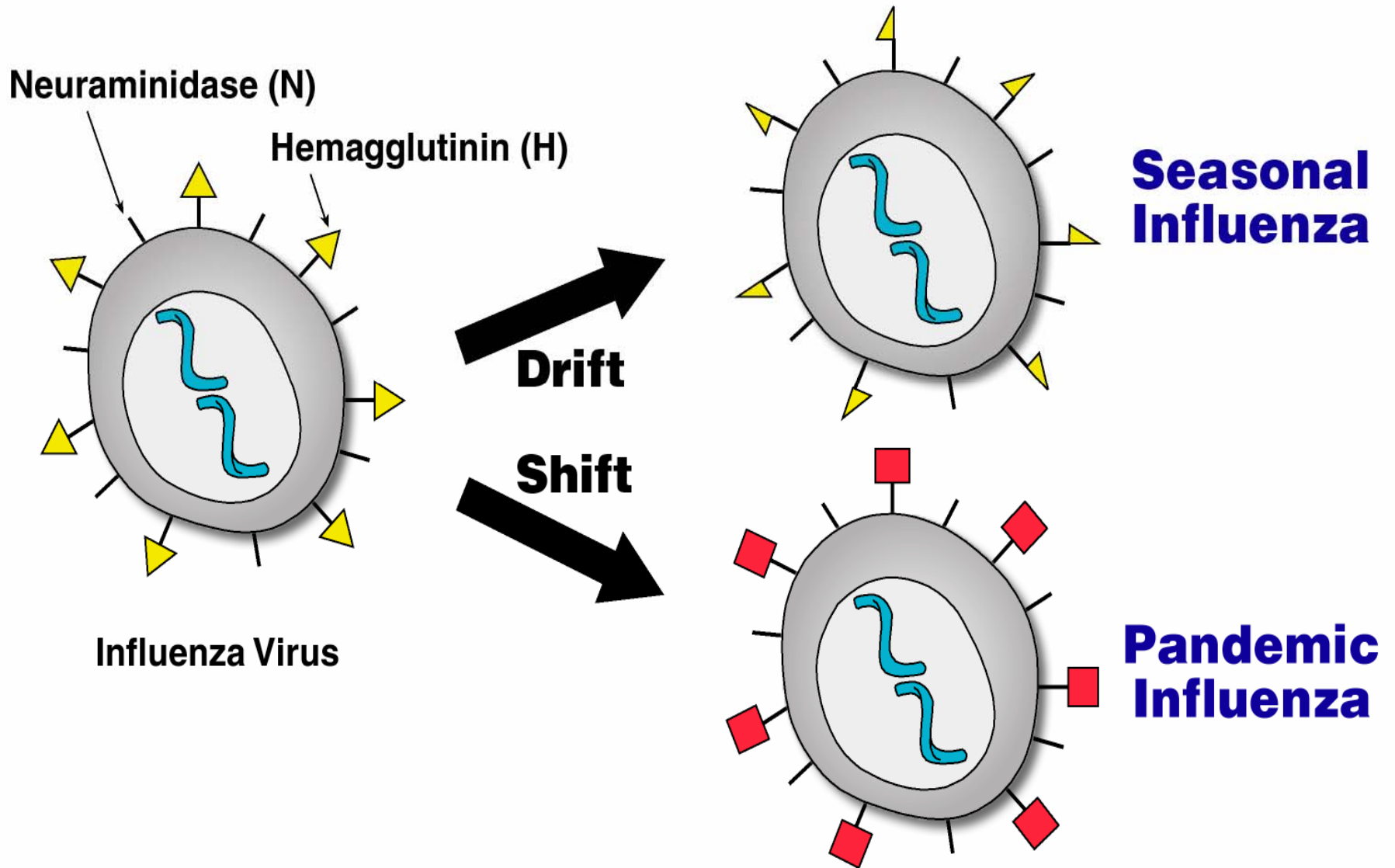


Influenza

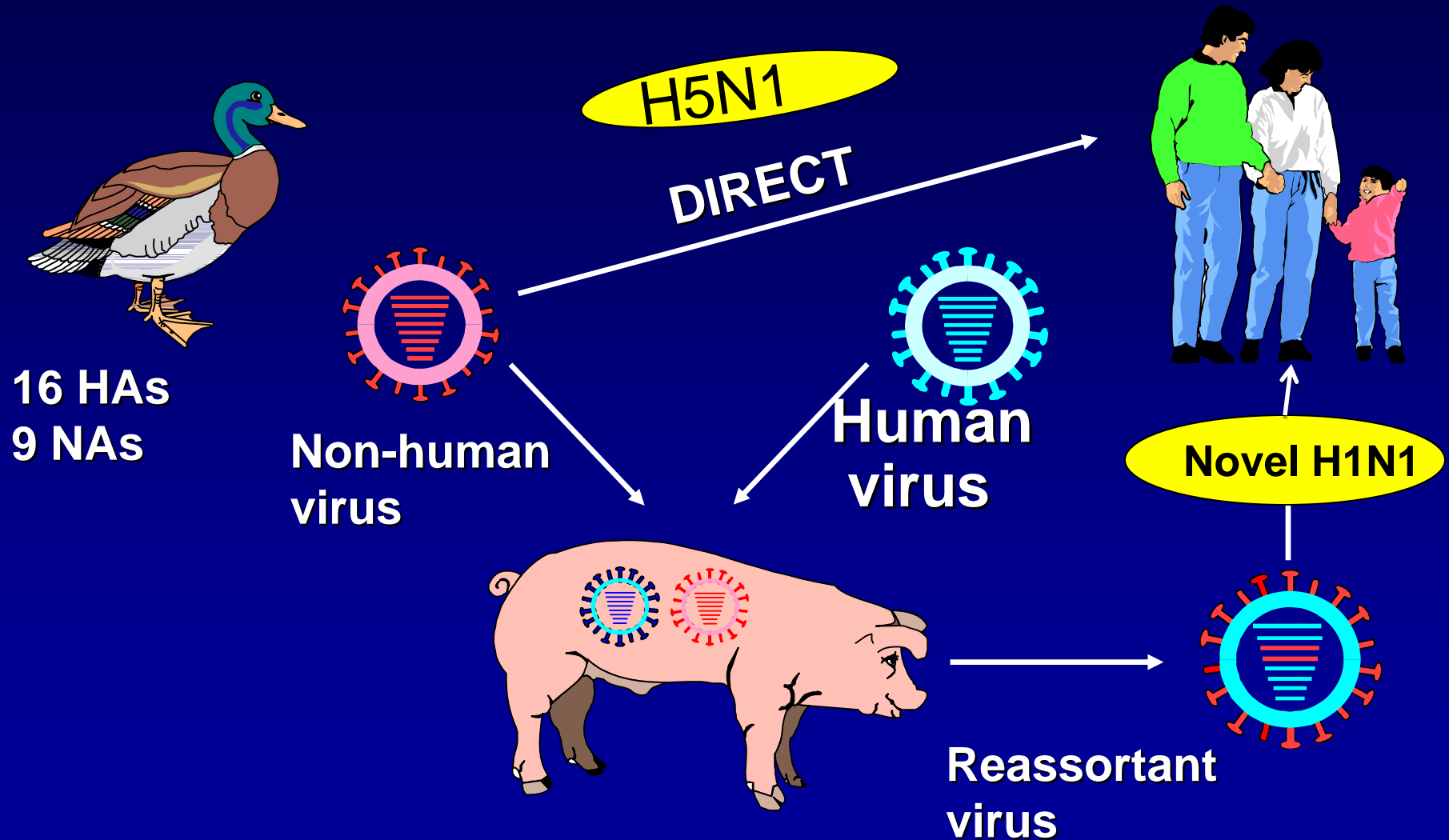
- Illness caused by infection with an influenza virus
- Classified into types A, B, and C
 - Only Types A and B cause significant disease
 - Types B and C limited to humans
- Type A viruses
 - More virulent
 - Affect many species



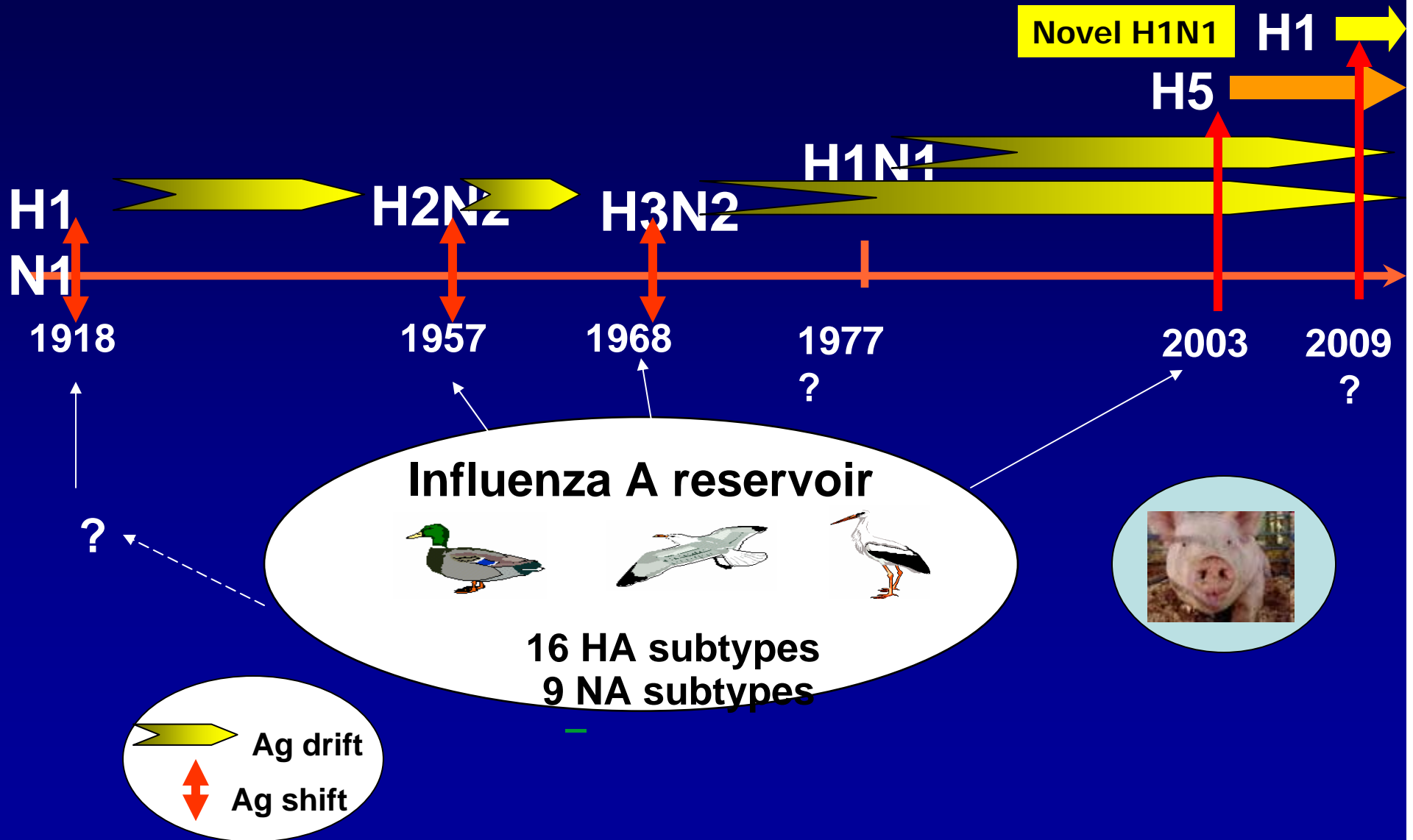
Influenza: Antigenic Drift and Shift



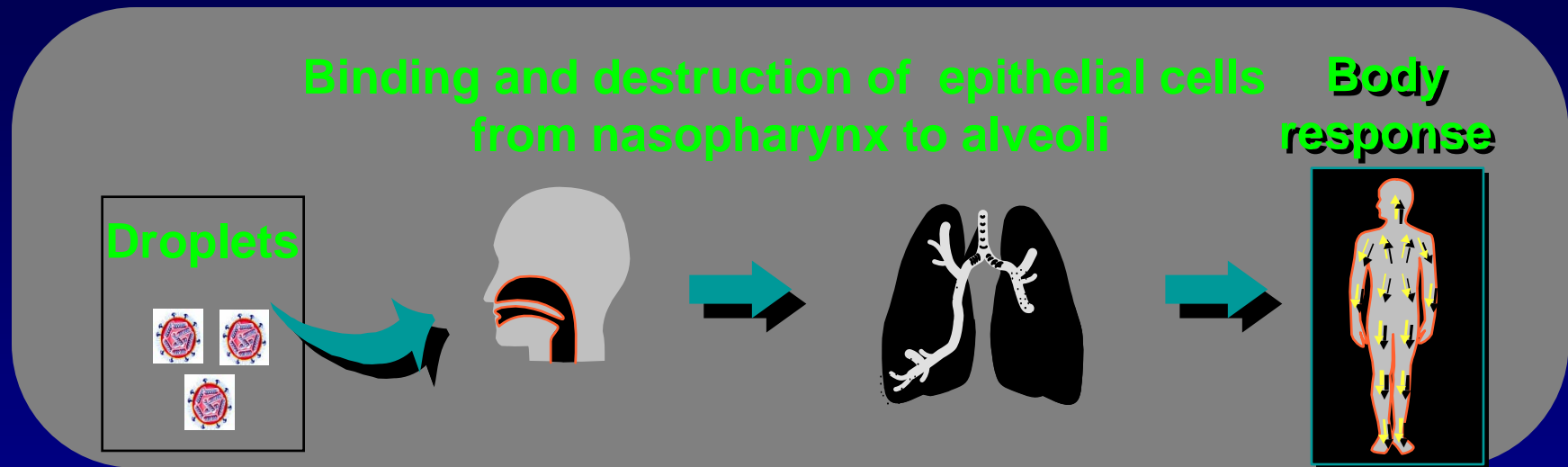
Mechanisms of Influenza Virus Antigenic "Shift"



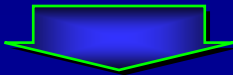
Circulation of Influenza A Viruses in Humans



Pathophysiology

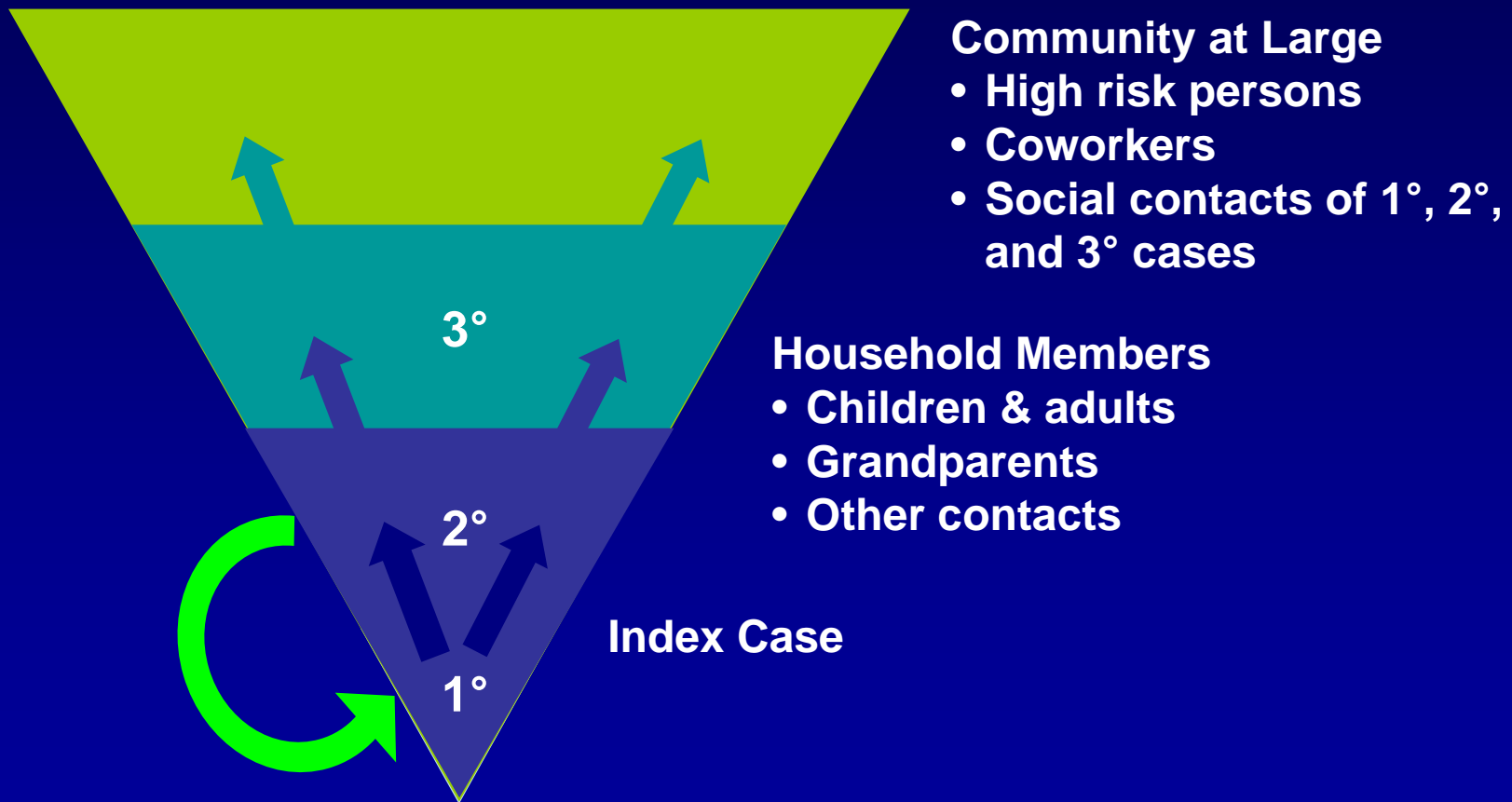


LOCAL INFLAMMATORY REACTION
Upper Respiratory Infection



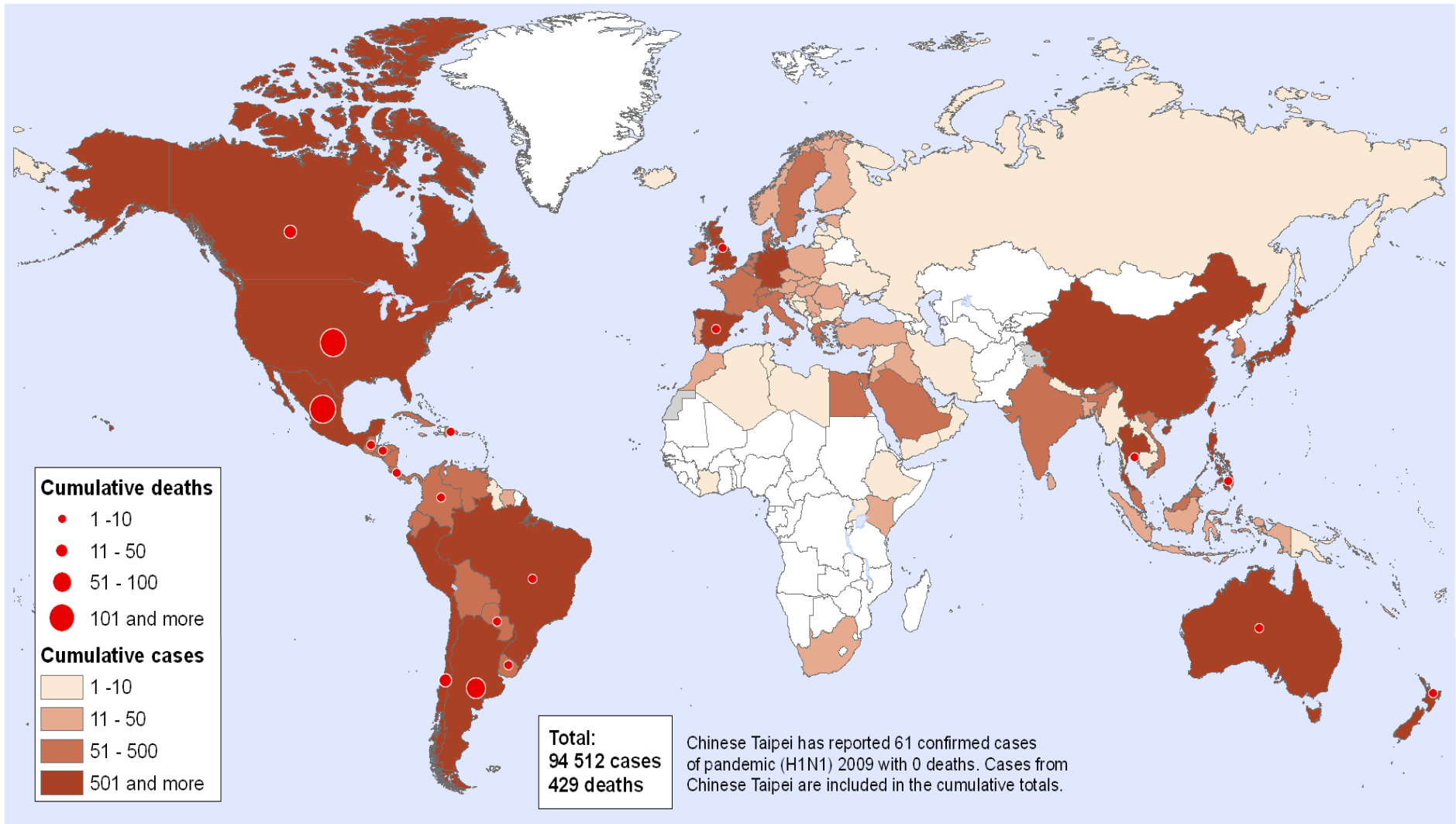
SYSTEMIC BODY REACTION
Fever, muscular pains...

Influenza Transmission Cascade



Pandemic (H1N1) 2009, Number of laboratory confirmed cases as reported to WHO

Status as of 06 July 2009
09:00 GMT



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: World Health Organization
Map Production: Public Health Information
and Geographic Information Systems (GIS)
World Health Organization



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Map produced: 06 July 2009 09:00 GMT

Clinical features

- Variable
- From non febrile URC to severe fatal pneumonia
- Most cases have typical influenza like illness
- Recover spontaneously

Symptoms of Pandemic influenza

Similar to seasonal human flu:

- Fever
- Cough
- Sore throat
- Runny or stuffy nose
- Body aches
- Headache
- Chills
- Fatigue
- Diarrhea and vomiting

Hospitalized Patients

- 2 – 6% hospitalized
- In Mexico 10% of positive cases admitted
- One third of these needed assisted ventilation
- About half of fatal cases had underlying disease

- Rapidly progressive respiratory failure accounted for severe and fatal cases
- Fatal cases had fever, severe breathing difficulty, bodyaches, tachycardia, low oxygen saturation, hypotension and cyanosis

Underlying condition in admitted patients

- Pregnancy
- Asthma
- Chronic lung disease
- Diabetes
- Obesity
- Immunosuppressive therapy
- Auto immune disease
- Neurological disorders
- Cardiovascular disease

High-risk groups for Complications

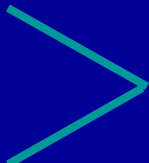
- **Infants and young children**
- **Elderly**
- **Persons of any age with chronic conditions**
 - Chronic lung and heart conditions
 - Chronic neurological conditions
 - Chronic metabolic diseases
 - Renal dysfunction
 - Immunosuppressed, immunocompromised
 - Pregnant women

Clinical Status

As of now

- Overall presentation and severity of pandemic flu similar to seasonal flu
- Most people recover without need for admission or treatment
- Most hospitals and health care systems are able to cope with increasing number of cases

Intervention strategies

- Non-pharmaceutical public health measures
 - Case or cohort isolation
 - Voluntary quarantine
 - Social distancing
 - Hand hygiene, cough etiquette
 - Respiratory protection (mask use)
 - Vaccines
 - Antivirals
-  **Pharmaceutical interventions**

Clinical Management

- Infection control:
 - Isolate the patient
 - Implement infection control precautions
 - All bodily fluids, secretions should be considered potentially infectious
 - Personal Protective Equipment for caregivers (health care workers and family members)
- Supportive care
 - Oxygen; mechanical ventilation for respiratory failure in the intensive care unit
- **Antiviral treatment - Tamiflu**

Antiviral Treatment for Novel H1N1 Influenza



	Amantadine	Rimantadine	Zanamivir	Oseltamivir
Target	M2	M2	Virus/cell entry	Virus/cell entry
H1N1 Virus susceptible?	Resistant	Resistant	Susceptible	Susceptible

Oseltamivir Tamiflu

- **Effective for treatment and prophylaxis**
- **Antiviral resistance rare**
- **Antiviral for pandemic containment**
 - **WHO has rapid response stockpile**
 - **Indian Government has 10 million doses available in stockpile**

Oseltamivir oral formulations

- Capsules 75 mg each
- 10 capsules per box
- Store at room temperature (15 - 30°C)



Liquid Suspension (for pediatric use)

- White powder mixed with 23 mL of drinking water
- Fruit flavored
- Refrigeration required
- Use within 10 days
- Oral dispenser included

Zanamivir

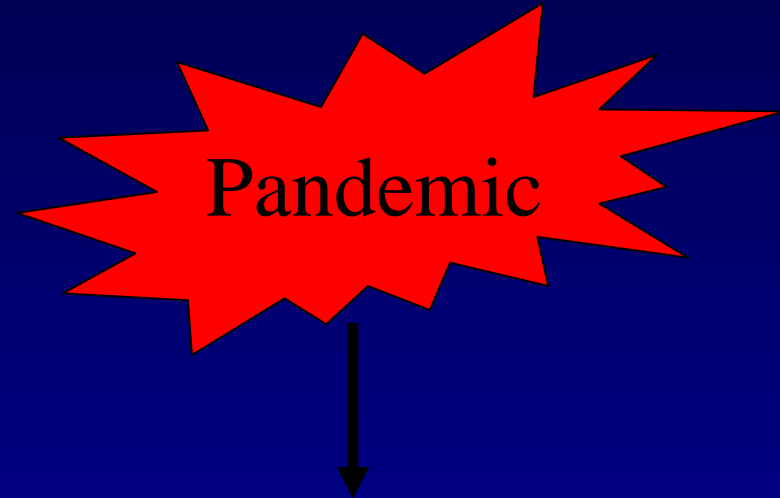
- Treatment: 5 days
 - Age ≥ 7 years: 2 inhalations (5 mg each), twice daily
- Prophylaxis
 - Age ≥ 5 years: 2 inhalations (5 mg each) once daily
 - Duration of prophylaxis depends on clinical setting
- No dose reductions for age, renal insufficiency



Issues if a large number of cases occur

- Triage
- Severity of illness
- Domestic care / hospital care / ICU care
- Hospital Surge Capacity

Triage – Why?

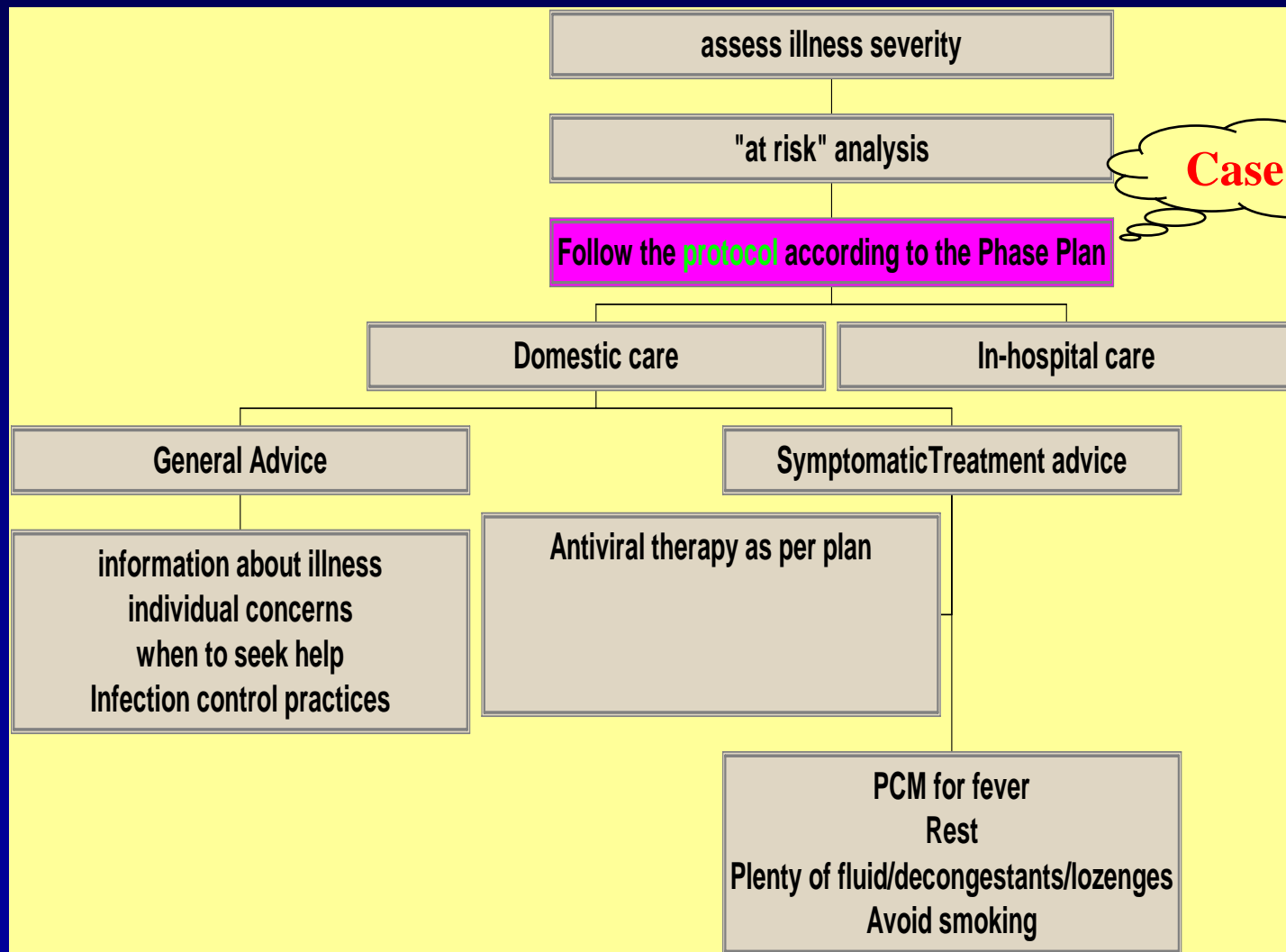


- ↑ apprehension
- ↑ Consultation for all RTIs
 - Including otherwise home managed illnesses
- Overwhelmed healthcare system

Triage – Where?

- Hospital
 - Screening area
 - ILI facility
- Community Clinics
- Identify such facility – needs to be able to handle a high patient load

Triage – How?



Hospital Surge Capacity

- Identify hospitals
 - Within district
 - convert
- Identify areas in the hospital
 - Waiting area for respiratory patients
 - Triage area
 - Isolation ward
- Identify & Procure
 - Manpower
 - Material
 - Budget
- Record Keeping, Projection, Ongoing assessment 27



Iowa State gymnasium, converted into hospital,
1918 flu epidemic

Mild illness

Why worry ?

- New virus – can affect a large number of people as no inherent immunity
- Virus known to evolve – may mutate into a more lethal strain
- Close monitoring and preparedness needed
- Treatment of high risk group to prevent death