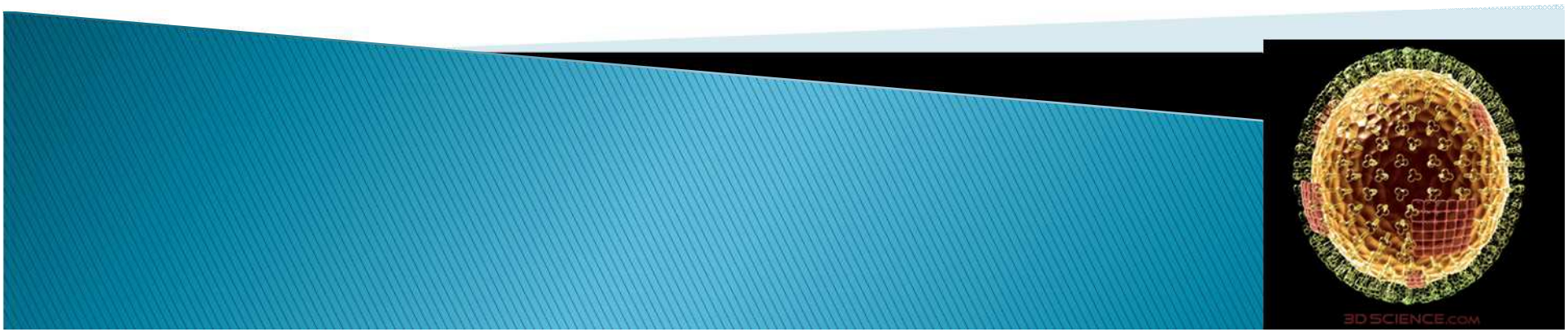
SWINE FLU Guideline

Prof. & Head- Chest & TB,
Dept Of Pulmonary Medicine, GMC & HH,
Bhopal



To Whom to screen? : ILI/ ARI

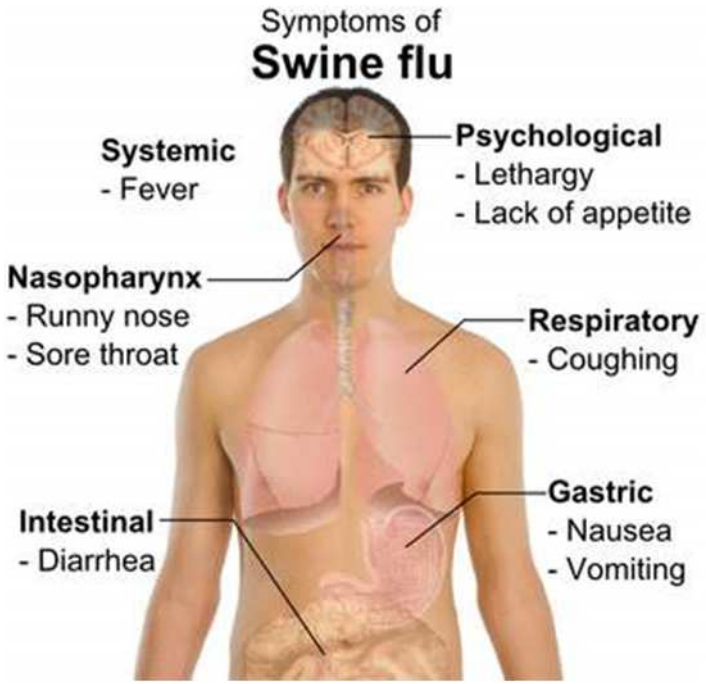
- Influenza-like illness (ILI) or flu is defined as fever (temperature of 100ºF [37.8ºC] or greater) with cough or sore throat in the absence of a known cause other than influenza

- Cluster cases reported in short time periods.

- Immunocompromised/ high risk patients with respiratory or other abnormal symptoms.

CLINICAL FEATURES

Cat A & B1 or B2



Vomiting or diarrhea (not typical for influenza but reported by recent cases of swine influenza infection)

Risk factors
Cat B2

- Age
- COPD- Asthma
- Immunocompromised state- HIV,Cancers
- DM
- Pregnancy
- Cardiac disease
- Obesity

Other Manifestations:
Seriously ill- Cat C

- Tachycardia
- Tachypnoea
- Low O2 sat.
- Hypotension
- Cyanosis
- Acute myocarditis
- Cardiopulmonary arrest

COMPLICATIONS
Seriously ill- Cat C

Similar to those of seasonal influenza

- Exacerbation of underlying chronic medical conditions
- Upper respiratory tract disease (sinusitis, otitis media, croup)
- Lower respiratory tract disease (pneumonia, bronchiolitis, status asthmaticus)

- Cardiac (myocarditis, pericarditis)
- Neurologic (Acute and post-infectious encephalopathy, encephalitis, febrile seizures, status epilepticus)
- Toxic shock syndrome
- Secondary bacterial pneumonia with or without sepsis

Adults Need attention if Present with

- Difficulty breathing or shortness of breath
- Pain or pressure in the chest or abdomen
- Sudden dizziness
- Confusion
- Severe or persistent vomiting

Seek emergency medical care. in Children, if:

In children emergency warning signs that need urgent medical attention include :

- Fast breathing or trouble breathing Bluish skin color. Not drinking enough fluids
- Not waking up or not interacting
- Being so irritable that the child does not want to be held
- Flu-like symptoms improve but then return with fever and worse cough
- Fever with a rash

Screen patients

WHO?

- Assign a staff member to screen patients

WHAT?

- Acute febrile respiratory illness
- Symptom of cough, cold, coryza.

Screen patients

WHEN?

- **Immediately after patients arrive** at facility

HOW?

- Screening criteria will vary depending on the local setting and patient population
- Establish a screening checklist for rapid identification of patients with ARD of potential concern

If screening is positive, then we should control the source of infection, educate, separate and provide priority service

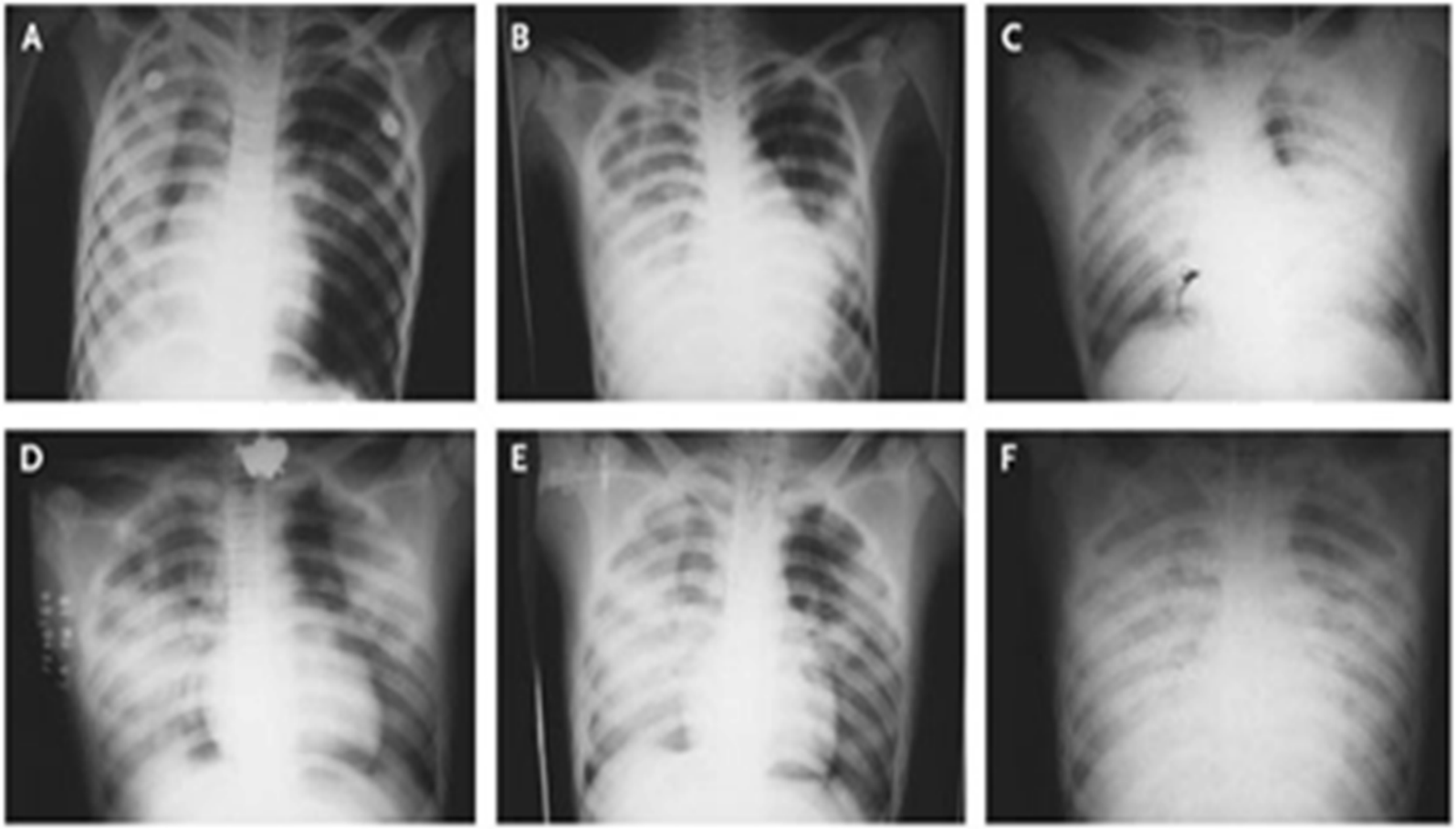
Educate patients

- Educate patients on **respiratory hygiene** and **cough etiquette**:
  - Cover nose and mouth with cloth /tissue when sneezing (**provide** if necessary)
  - Wash hands after contact with respiratory secretions
- Place posters emphasizing cough etiquette in waiting areas

LABORATORY FINDINGS

- CBC- leucocytosis/leucopenia
  lymphopenia
- Elevated CPK, LDH
- Elevated UREA,CREATININE
- Elevated AST,ALT
- CHEST RADIOGRAPH-bilateral patchy pneumonia.

H1 N1 Pneumonia



TO WHOM TO TEST

Priority for testing should be given to :

Those who require hospitalization and

Those who are at high risk for severe complications –CAT C

No testing if illness is mild or Moderate (Category A & B) and the person resides in an area where positive cases are being regularly reported.

Specimens

- Nasopharyngeal swab, nasal swab, throat swab, combined oropharyngeal/ nasopharyngeal swab, or nasal aspirate
- Swabs with a synthetic tip (eg, polyester or Dacron) and an aluminum or plastic shaft should be used. Swabs with cotton tips and wooden shafts are not recommended.
- The collection vial in which the swab is placed should contain 1 to 3 mL of viral transport media.

- Respiratory specimen should be collected within 2 to 3 days of illness.
- Specimens should be placed in viral transport media and placed on ice (4°–6°C, upto 48 hrs) or refrigerated (–70°C) till transportation to the laboratory

TREATMENT

- *Antiviral drugs can be given to treat those who become moderately ill -CAT B1&B2*

OR

- *Severely ill with influenza CAT C.*

Mild Cases

- Supportive: Paracetamol, decongestants, antihistaminics , antibiotics, fluids…sos.

  *NO SALICYLATES IN CHILDREN/ YOUNG ADULTS: REYE'S SYNDROME

- control precautions: cough etiquette
- Hand hygiene & Natural ventilation
- Home isolation/ Rest/ Plenty of Liquids.
- *Antivirals : *best within first 48 hours*

  **Early administration in at-risk pts i.e. those with comorbidities/ pregnancy…*

Hospitalized pts:

- Antivirals and swab testing
- Pneumonia management with repeated severity assesment (antibiotics, if necessary)
- Resp. Support: early detection of hypoxia

  Correction of hypoxia with supplemental O2 , BiPAP and Mechanical Ventilator as necessary with Critical Monitoring.

Patient placement and cohorting of patients

In order of preference the best configurations are:

1. **Single room** for a patient
2. **Cohort** patients with same known or suspected diagnosis.
3. **Maintain spatial separation** of at least 1-1.5 meter between patients

During admission of patients with respiratory infections

- Educate patients on cough etiquette and respiratory hygiene
- Ensure adequate disposal of sputum
- Reduce number of visitors
- Review periodically
  - Discharge promptly-do not prolong stay
- Limit access to visitors

Inpatient transport of patients with ARDs of potential concern

- Avoid patient movement outside of the room unless essential
- Alert health care workers receiving the patient in advance about the patient's diagnosis and relevant infection control measures
- Clean and disinfect surfaces that may have come in contact with the patient or patient's secretions

Inpatient transport of patients with ARDs

- Place a **medical mask** on the patient while moving or caring for them outside their room
- If masks are not available, instruct the patient to **cover their mouth/nose when coughing or sneezing**

Entering and Exiting Isolation Rooms or Cohort Areas

Health Care Workers and Visitors

Remember! Use clean water to wash and rinse hands

Antiseptic (alcohol) handrub

- You can make an alcohol/glycerin solution:
- Use 2-5 ml of solution for each application
- Rub the solution vigorously into hands until dry

Always use standard precautions when providing care, even when patient looks well !!

Health care workers

Before entering:

- Assess the risk of any planned clinical procedures and the expected level of contact with the patient
- Collect all equipment needed
- Perform hand hygiene
- Mask or particulate respirator before entering
- Other PPE as needed either at door or inside room

PPE for standard precautions

Includes any or all of the following:

- Gloves
- Gowns
- Eye protection
- Medical masks

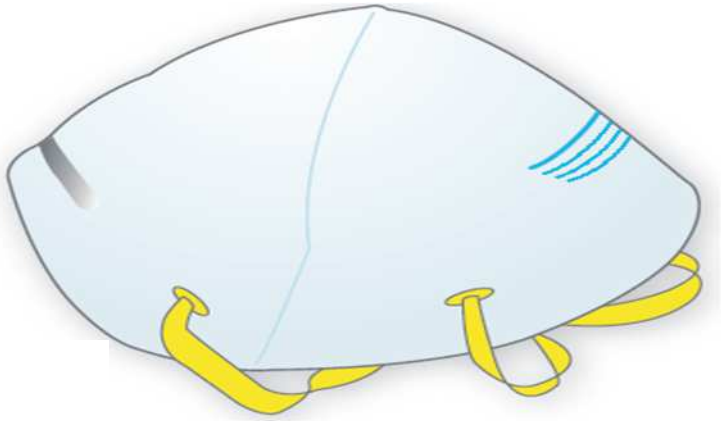
N95 mask: Aerosol-generating procedures that warrant airborne precautions

Aerosol-generating procedures in suspected influenza patients require a particulate respirator N95 plus other PPE as needed:

- Sputum induction, sampling.
- Resuscitation, intubation, suctioning, and/or extubation
- Bronchoscopy

Particulate Respirator

To prevent inhalation of airborne-droplet nuclei by the health care worker



Two examples:

N95

EU FFP2

Check for Seal

Visitors/family members

Recommendations for patient's visitor/family

- The patient's right to receive visits should be guaranteed
- Encourage parents/legal guardians of pediatric patients to accompany the patient throughout the hospitalization

What kills influenza virus?

- Influenza virus is destroyed by heat (167–212°F [75–100°C]). In addition, several chemical germicides, including chlorine, hydrogen peroxide, detergents (soap), iodophors (iodine-based antiseptics), and alcohols

PPE, including rubber apron, must be worn during cleaning and disinfection

Key issues about cleaning and disinfection

- ✓ The environment used by the patient MUST be regularly cleaned.
- ✓ Cleaning should use proper techniques to avoid aerosolization of dust.
- ✓ Only surfaces that enter in contact with the patient's skin/mucosa and surfaces frequently touched by health-care workers require disinfection after cleaning.
- ✓ Health-care workers MUST use PPE for cleaning and disinfection of respiratory equipment and hand hygiene must be performed after PPE removal.

Handling linen and waste

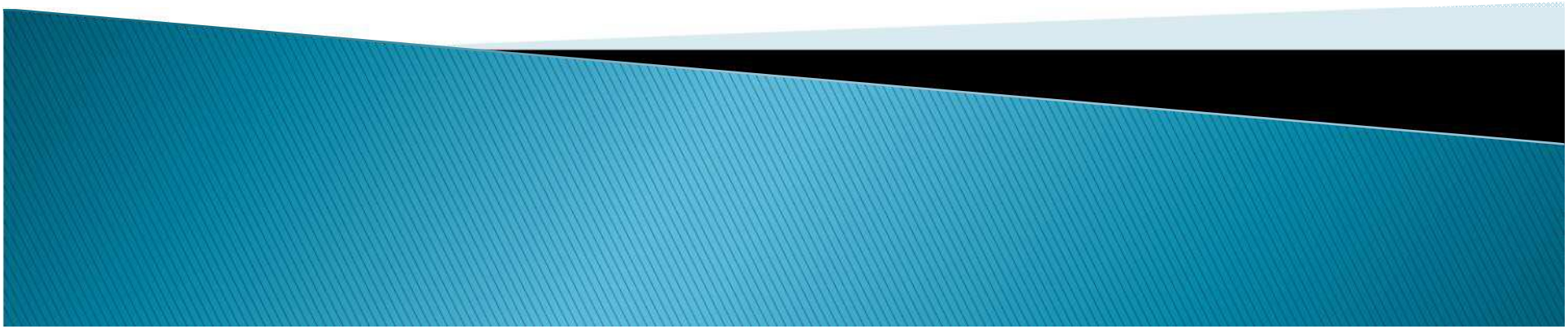
- The risk of being exposed to or acquiring an IRD through handling waste or used linen is low
- ALL used linen & waste should be placed in bags/containers which can withstand transportation
- Double bagging is not needed for used linen/waste

Important points to remember

- **Avoid aerosolization** whenever handling & disposing waste especially faeces
- Wear **gloves** whenever handling waste
- Perform **hand hygiene** immediately after removing the gloves
- **Keep bins closed** and bags tied carefully

INCUBATION PERIOD

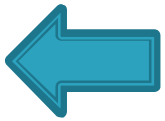
1–7 DAYS
AFTER LAST DEFINITE EXPOSURE

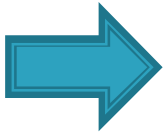


Contagiousness:

1 day before onset of symptoms

upto 7 days!





Children are contagious for longer periods.
May be upto 2-3 weeks?

Dealing with the Deceased

- Transport of deceased persons with precautions
- Hand hygiene should be performed after completing transport.

- For deceased persons with confirmed, probable, or suspect novel influenza A (H1N1):
  - limit contact with the body in health care settings to close family members
  - Direct contact with the body is discouraged
  - Necessary contact may occur as long as hands are washed immediately with soap and water.

prevention

Avoid close contact

- Avoid close contact with people who are sick. When you are sick, keep your distance from others to protect them from getting sick too.
- Aerosols spread the virus in any environment

Stay home when you are sick.

- If possible, stay home from work, school, and errands when you are sick. You will help prevent others from catching your illness.

Cover your mouth and nose.

- Cover your mouth and nose with a tissue when coughing or sneezing. It may prevent those around you from getting sick

Avoid touching your eyes, nose or mouth.

- Germs are often spread when a person touches something that is contaminated with germs and then touches his or her eyes, nose, or mouth.

Clean your hands.

- Washing your hands often will help protect you from germs.
- Hand washing proved to be best procedure in prevention of Majority of Communicable diseases.

SOAP & WATER BEST!

Administrative control measures

- Early recognition and reporting of patients with suspected or confirmed disease
- Instruction in cough hygiene: Reducing or eliminating the source of infection
- Cohorting of patients to a separate well-ventilated waiting area
- Adequate provision of services within the isolation areas
- Rapid diagnosis for disease confirmation
- Screening, councelling, followup of contacts.

VACCINATION

- Annual repetition- booster
- Effect starts after 2-3 weeks, 60-70% protection provided
- High risk group
- Health workers
- Injectables/ nasal ????

TAKE HOME MESSAGE

- Proper screening/triage, preferably in well-ventilated area
- For suspects/patients – ensure safe placement and in-patient transport
- Separate designated isolation area (single room or cohorted with same diagnosis)
- Maintain $\geq$1 meter distance between patient beds
- Do not forget infection control measures including cough hygiene, hand hygiene, appropriate level of precaution, use of appropriate PPE as applicable, for staff and visitors.
- Reporting of suspected cases/ cluster of cases.
- Vaccination

Thanks

Created for Awareness on Swine Flu

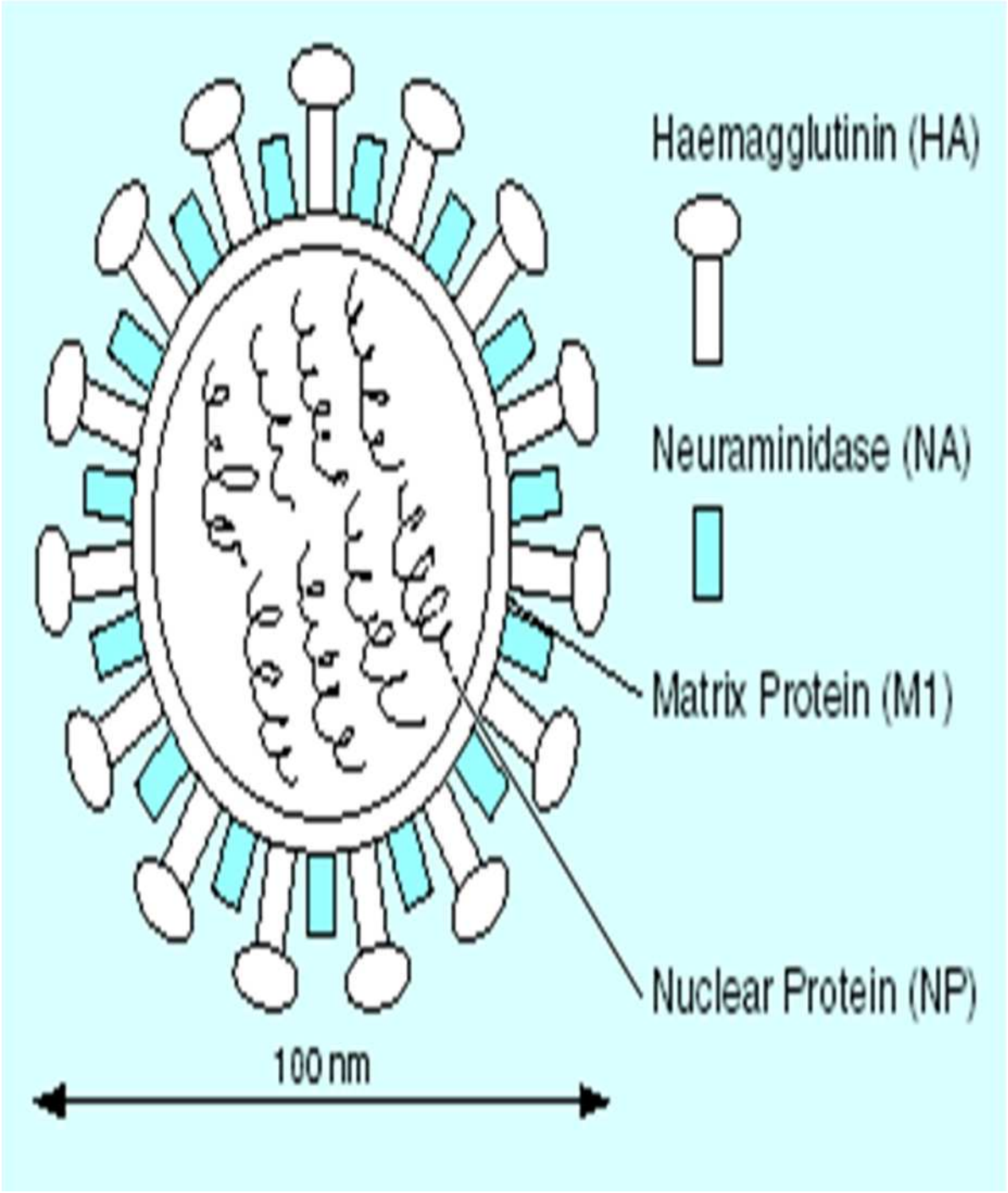
By

DR. LOKENDRA DAVE, M.D.

Dept. of Pulmonary Medicine
Gandhi Medical College, & Hamidia Hospital
Bhopal
Mob: 9893155531
Email:- drlokendradave@yahoo.com

Swine Flu:
Basics & Essentials

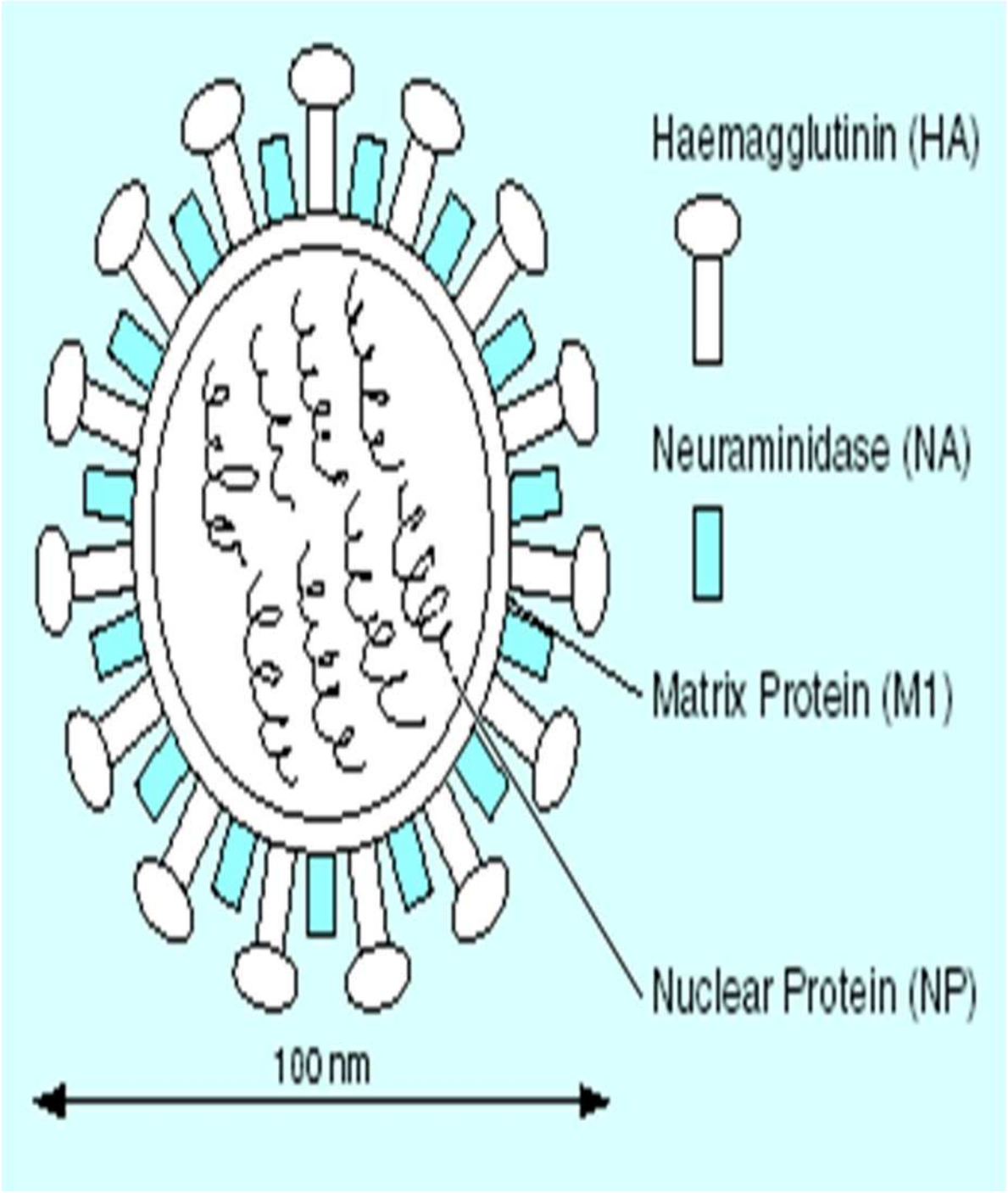
Dr Debasis Biswas,
Prof & Head, Deptt. of Microbiology,
AIIMS Bhopal



Enveloped
Glycoprotein spikes
-- Hemagglutinin
-- Neuraminidase

RNA virus
Segmented genome

M:
RNP: } Influenza A, B, C
RNA depdt. RNA polym.



Influenza A:
Multiple species:
Birds; pigs; horses; etc

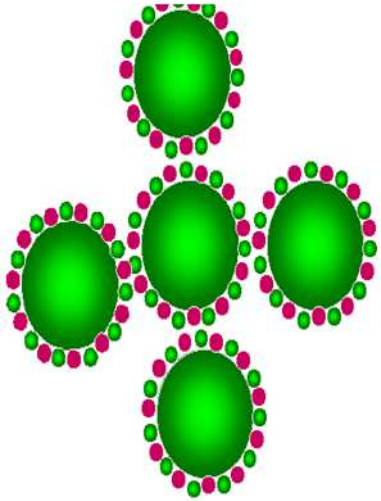
Influenza B:
Humans only

Influenza C:
Humans only; subclinical

Ordinary strains:
Species barrier

Pandemic strains:
Cross species barrier.

HA & NA in viral infectivity

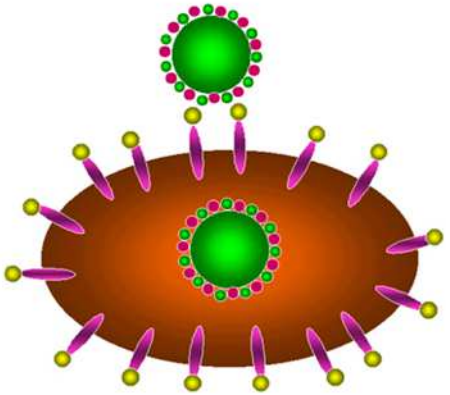


Flu hemagglutinin binds to sialic acid on other virus particles: virus clumps

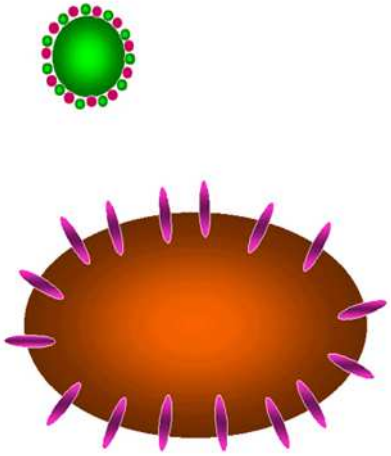
OR virus sticks to mucous in respiratory tract

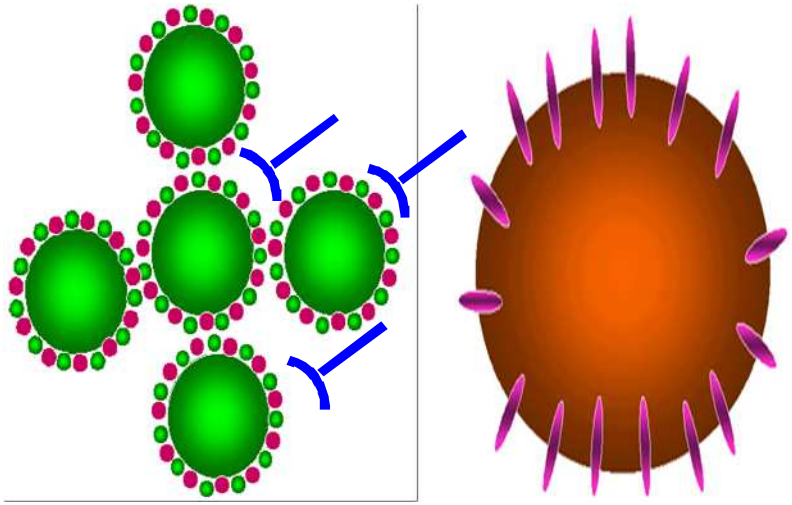
Virus hemagglutinin sticks new virus particle to sialic acid on cell surface

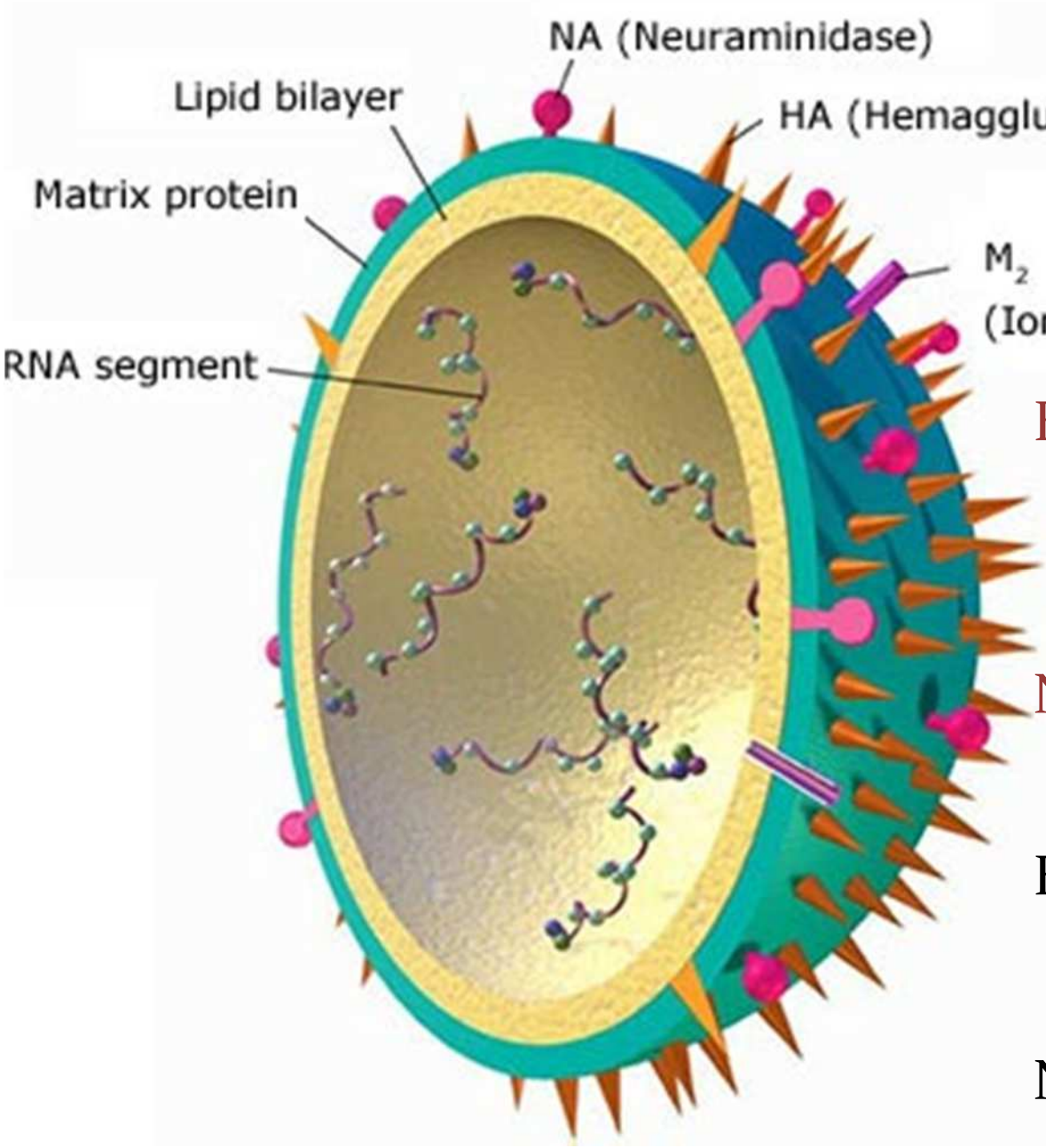
Virus cannot escape from infected cell



Neuraminidase of virus removes sialic acid from cell surface thereby releasing virus







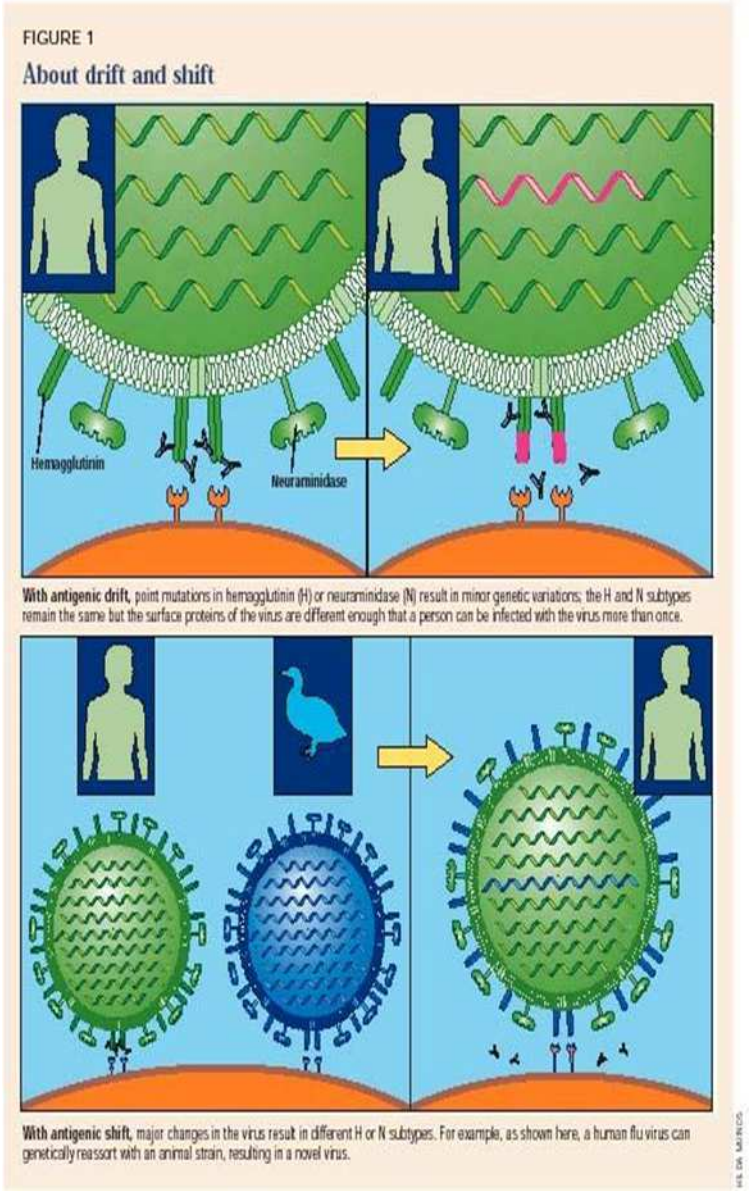
HA: Rod- shaped spikes
Sialic Acid Receptors
Viral Entry

NA: Mushroom- like spikes
Viral Release

HA: Types 1- 16
Types 1-3; 5 (Humans)

NA: Types 1- 9
Types 1-2 (Humans)

Genetic variations: drift & shift



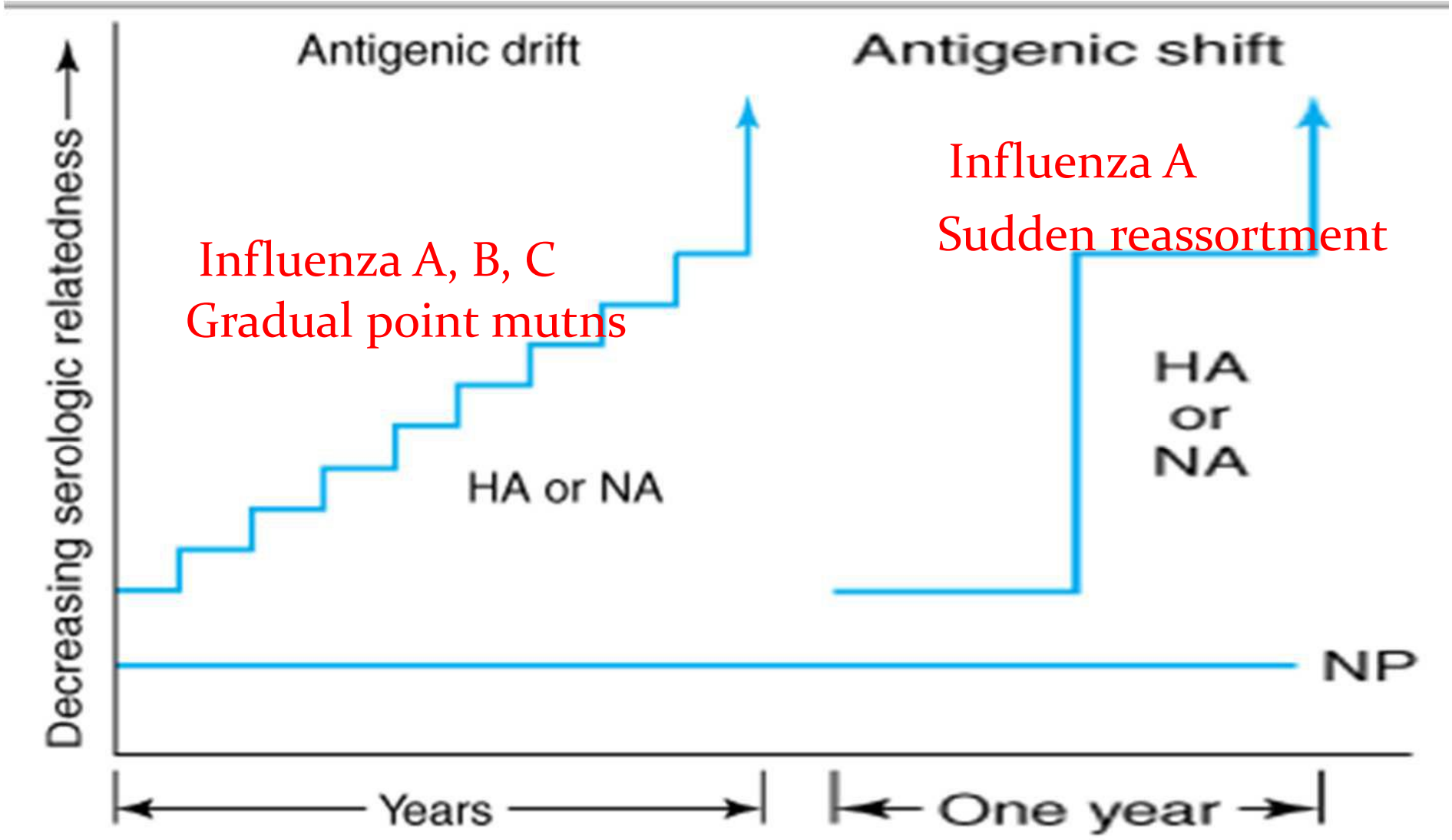
Antigenic drift

- RNA polymerase: Error prone
- Mutations: gradually accumulate
- Immune evasion; no new subtype

Antigenic shift

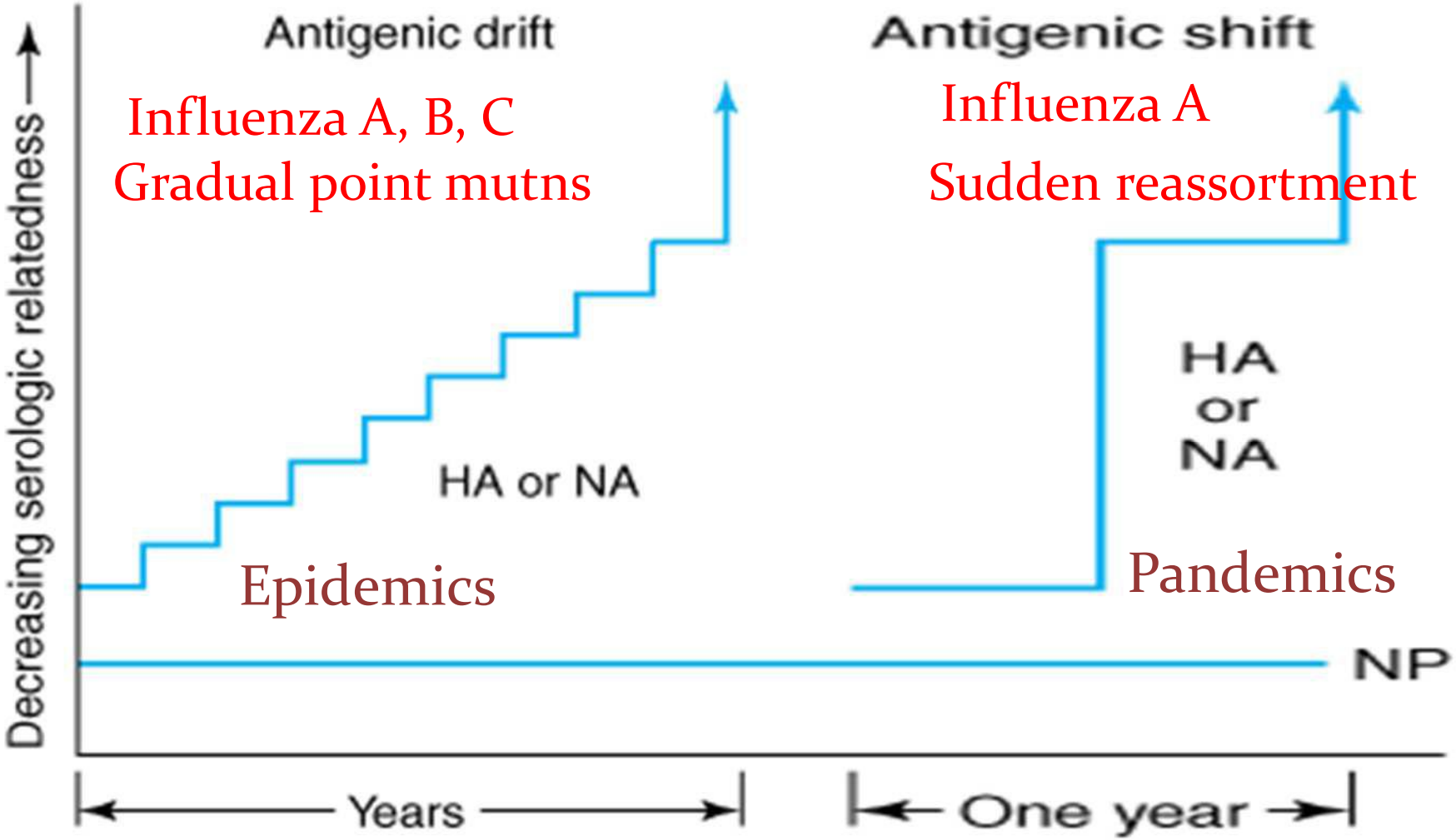
- Two difft. strains coinfecting a cell
- Gen. Recombn. between segments
- Sudden emergence of new subtype.

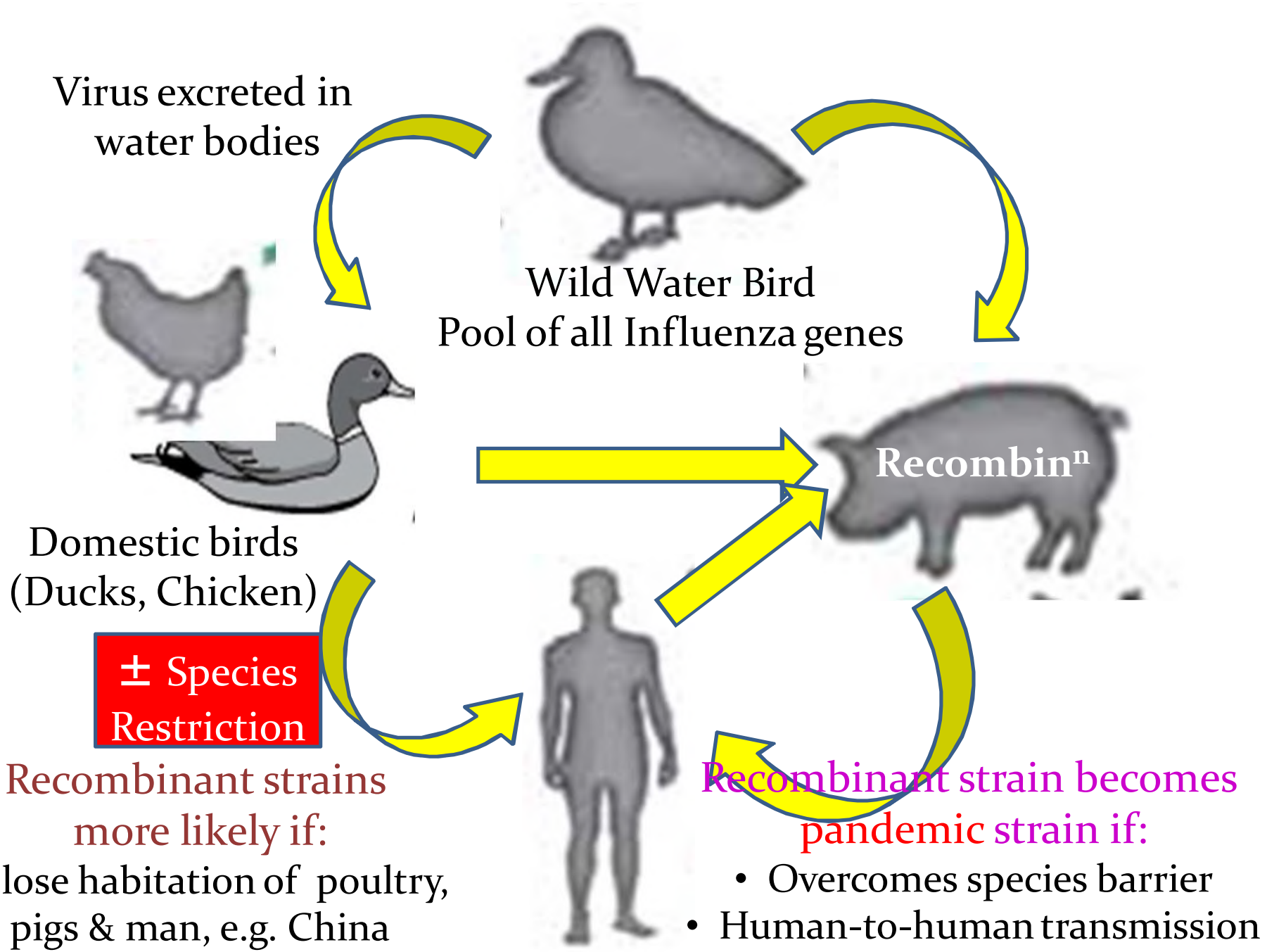
Influenza: Antigenic Variation



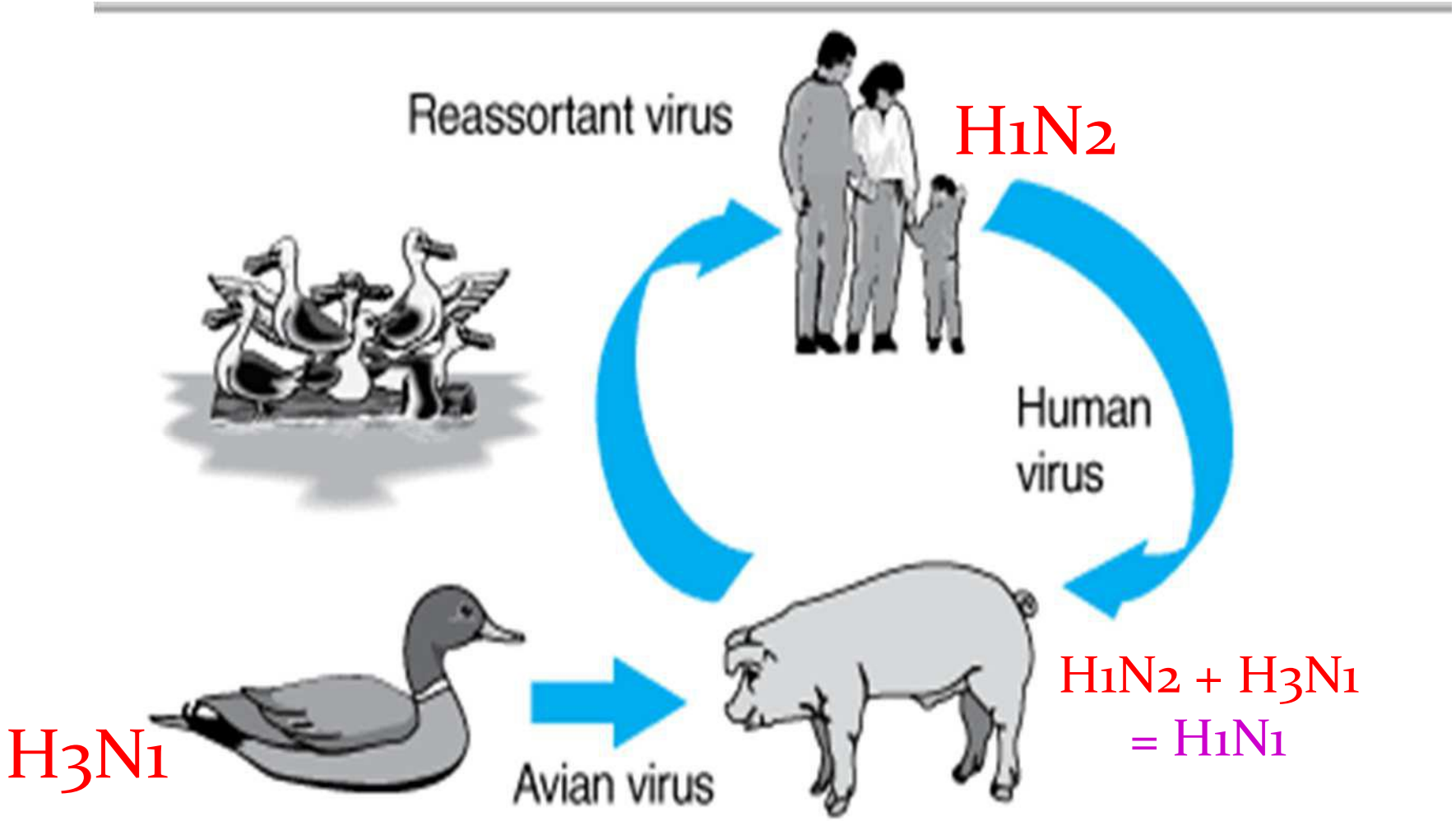
- Non- protective antibodies in population
- Immune selection of mutants

- Non- protective antibodies in population
- Crossing Species Barrier
- Human to human transm




Virus excreted in water bodies
Wild Water Bird
Pool of all Influenza genes
Recombinⁿ
Domestic birds (Ducks, Chicken)
± Species Restriction
Recombinant strains more likely if:
• Close habitation of poultry, pigs & man, e.g. China
Recombinant strain becomes pandemic strain if:
• Overcomes species barrier
• Human-to-human transmission

Influenza: Genetic Reassortment



PIGS: Mixing vessels

Swine flu: Suspect

- Acute febrile (38°C) Respiratory illness
- Epidemiologically suggestive:

  Contact/ Travel/ Residence : 7 days

Swine flu: Confirmed

- RT- PCR
- Viral culture
- 4-fold ↑ in swine influenza A (H1N1) virus- specific neutralizing antibodies

Sampling

At earliest contact with patient

Before antiviral administration

PPE: Gown/ Gloves/ Goggles

Head/ Foot/ Mask: N95

Ambulatory patient

- Throat swab
- Nasopharyngeal swab

Intubated patient

- Lower Respiratory aspirate

CTNS: Combined Throat & Nasopharyngeal Swab

Labels: Name of pt/ Unique ID/ Hospital

Sample Container; Requisition Form

Triple Packaging

Sample Storage & Transportation

< 48 hours: 4°C

> 48 hours: -70°C

Transported in ice in VTM

To avoid freeze- thaw cycles

Simple steps to prevention

- Hand washing: Contact with face/ resp. secretions
- Cough etiquette
- Arm's length from affected people
- Avoiding crowded places
- Avoiding hand-shakes & hugging

Administrative control for prevention

- Reducing waiting time for suspected patients
  - — OPD Registration
  - — Radiology
  - — Lab
- Isolation with airborne precautions for admitted pts
  - — Separate room with dedicated AHU
  - — Open air ventilation with sunlit illumination
  - — 3 feet distance between beds
  - — Mopping of patient's surroundings with Sodium Hypochlorite