



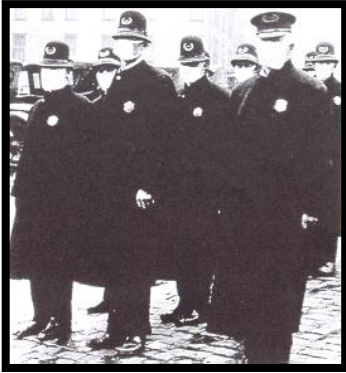
World Health Organization

Influenza A - H₁N₁

Influenza Virus Types A and B

Type A (Seasonal, avian, swine influenza,....)	Type B (Seasonal influenza)
Can cause significant disease	Generally causes milder disease but may also cause severe disease
Infects humans and other species (e.g., birds; H5N1)	Limited to humans
Can cause epidemics and pandemics (worldwide epidemics)	Generally causes milder epidemics

Circulating Influenza Strains and Pandemics in The 20th Century



1918: “Spanish Flu” **1957: “Asian Flu”** **1968: “Hong Kong Flu”**

20-40 million deaths

1-4 million deaths

1-4 million deaths

H1N1

H2N2

H3N2

1920

1940

1960

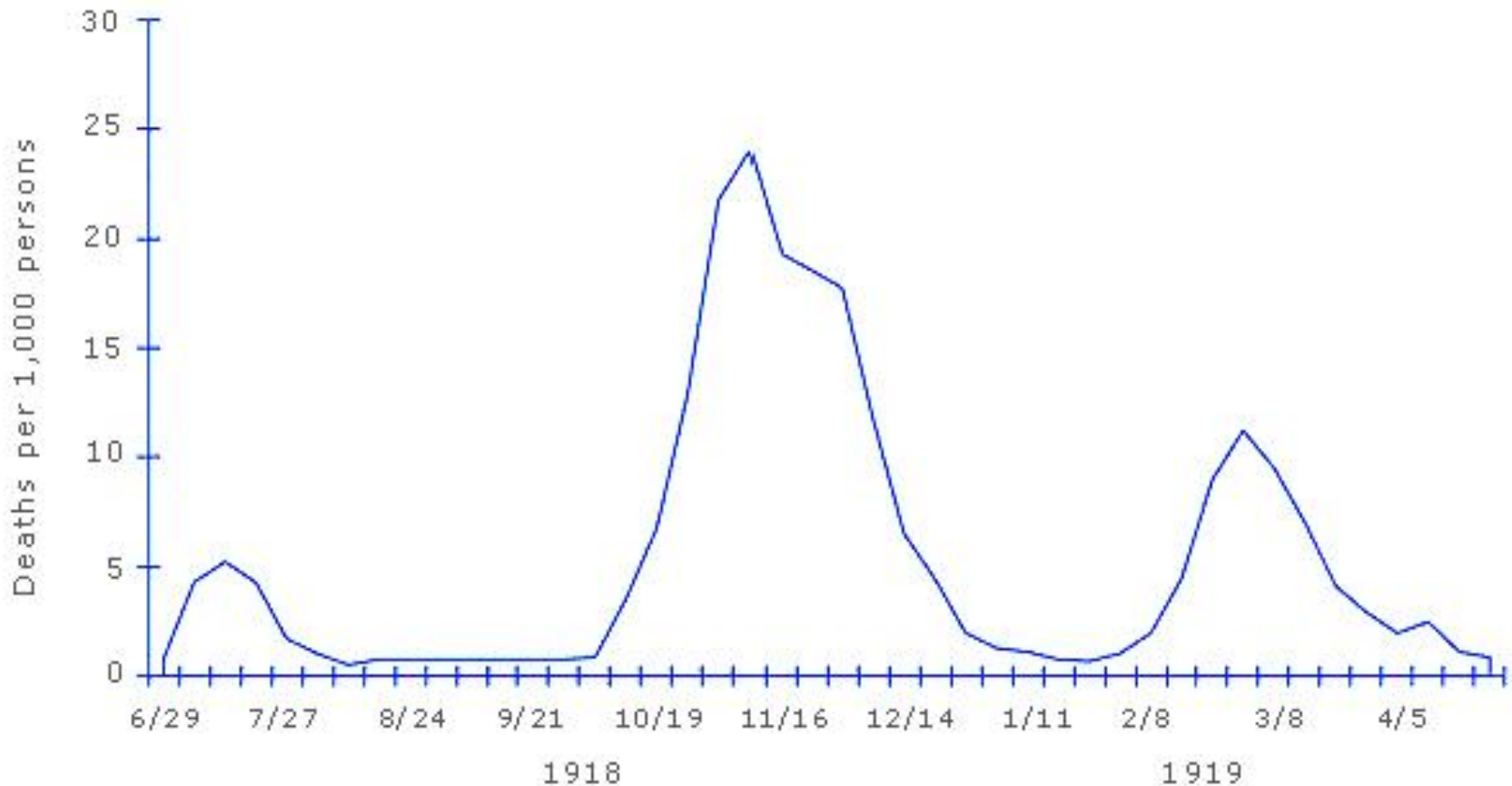
1980

2000



World Health Organization

Pandemic Waves (1918-1919)



Source: CDC Emerging Infectious Diseases · Vol. 12, No. 1, January 2006
Link: <http://www.cdc.gov/ncidod/EID/vol12no01/05-0979.htm>

Seasonal Epidemics vs. Pandemics

Seasonal Influenza

- A public health problem each year

- Usually some immunity built up from previous exposures to the same subtype

- Infants and elderly most at risk

Influenza Pandemics

- Appear in the human population rarely and unpredictably

- Human population lacks any immunity

- All age groups, including healthy young adults

Prerequisites for pandemic influenza

A new influenza virus emerges to which the general population has little/no immunity

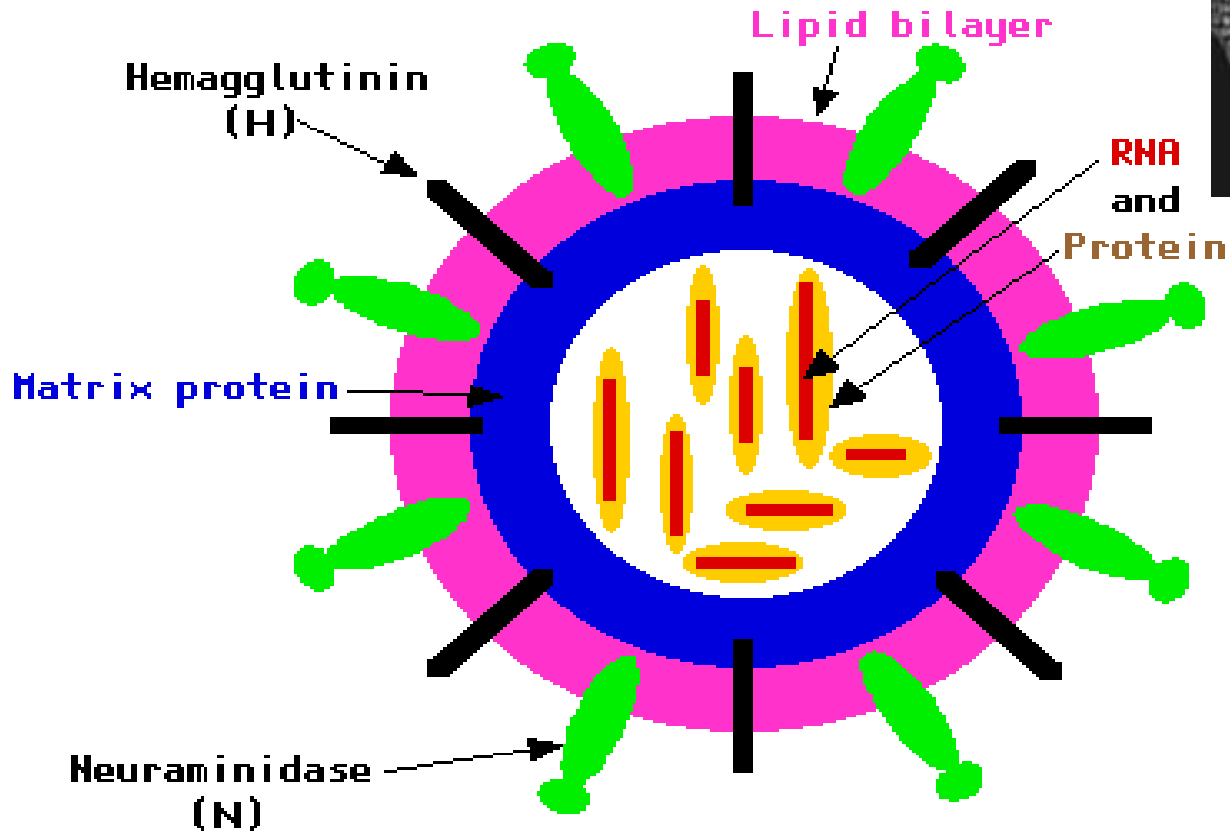
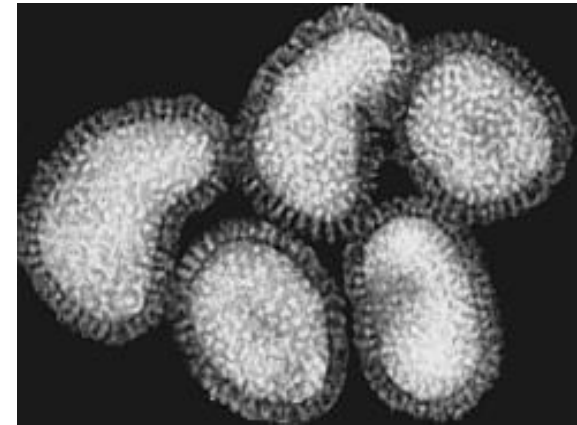
The new virus must be able to replicate in humans and cause disease

The new virus must be *efficiently* transmitted from one human to another



World Health Organization

The Influenza Virus





World Health Organization

A H1N1 :new virus

- The 2009 H1N1 virus is a hybrid of swine, avian and human strains

Influenza A (H1N1)

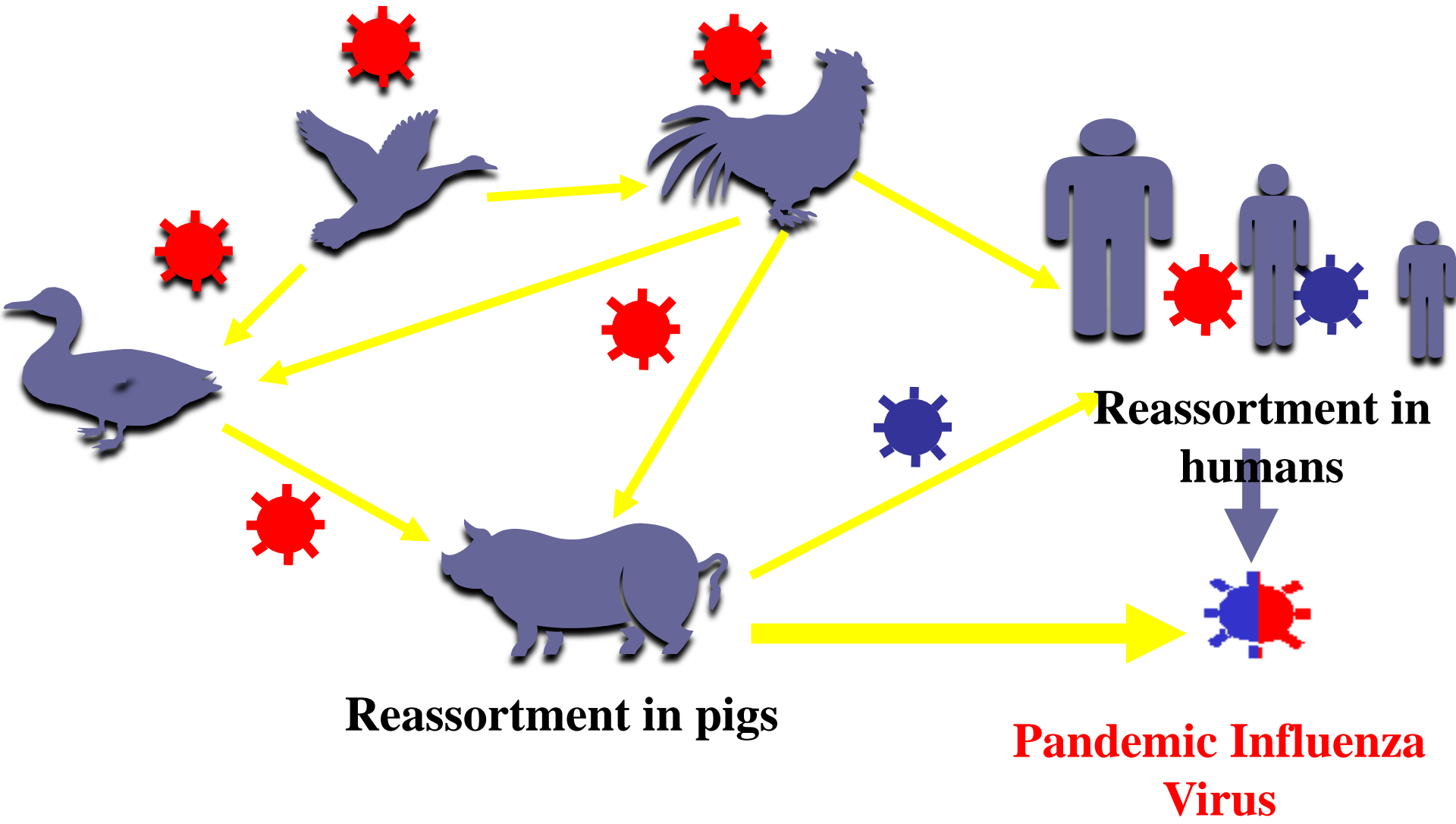
Different Species Infected by Influenza A Subtypes

H1	
H2	
H3	
H4	
H5	
H6	
H7	
H8	
H9	
H10	
H11	
H12	
H13	
H14	
H15,16	

N1	
N2	
N3	
N4	
N5	
N6	
N7	
N8	
N9	

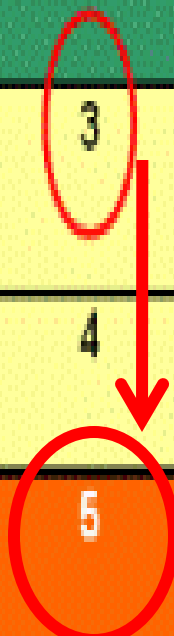
- All 16 H subtypes infect birds
- Most widespread epidemics & all pandemics: H1N1, H2N2, H3N2

Viral Re-assortment



WHO Pandemic 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 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	Efficient and sustained human-to-human transmission	6



Next Phases:

- Post peak period – in countries with adequate surveillance system, levels of infl has dropped below peak
- Possible new wave – level of infl activities in these countries rising again
- Post pandemic period – infl activity returned to seasonal infl level in most of these countries

Influenza Surveillance

Essential for.....

- Identification of high risk groups
- Planning of prevention and response activities for complications
- Estimating the disease burden in terms of health and economic impact

Standardized case definitions

1. **Influenza-like-illness (ILI):**

- Sudden onset of fever over 38°C, AND
- Cough or sore throat, AND
- An absence of other diagnoses

2. **Severe Acute Respiratory Infections (SARI):**

(Age 5 years or more)

- Sudden onset of fever over 38°C, AND
- Cough or sore throat, AND
- Shortness of breath or diff in breathing, AND
- Requiring hospitalization

(Age less than 5 years) case def acc to IMNCI for pneum/severe/very severe pneum

Standardized case definitions...contd....

3. **Confirmed case:**

- Any case with lab test results positive for influenza

Case definitions for swine flu in humans

1. **Suspected case**

2. **Probable case**

3. **Confirmed case....**RT-PCR, culture, four fold rise in H1N1 specific neutralizing antibodies

4. **Close contact**

5. **High risk group**

6. **Infectious period**

Big droplets
fall on people
surfaces bed clothes



Courtesy of CDC

Signs and Symptoms

	<u>Human Influenza</u>
Type of infection	Upper and lower respiratory
Fever	Yes
Headache	Yes
Cough	Yes
Respiratory symptoms	Varies; sore throat to difficulty breathing
Gastrointestinal symptoms	Uncommon, except children, elderly
Recovery	2-7 days

Diagnosis of Swine flu

- Respi specimen within 4-5 days
- **Sample collection:** by treating doctor
- **Sample:** nasopharyngeal and throat swab
- **Storage:** 2-8⁰c until they can be placed at -70⁰c
- **Transportation:** on dry ice in triple packaging with clear and detailed labeling
- **Bio-safety for lab staff:**
 - Conducted in BSL2 labs inside bio-safety cabinet
 - Isolation in BSL2 lab with BSL3 practices

Additional precautions

- Recommended PPE
- N-95 respirator
- Shoe covers
- Closed-front gown
- Double gloves
- Goggles/face shields
- Disinfectants (70%ethanol/ 5% lysol/ 10% bleach)
- Self monitoring of illness and reporting to supervisors
- Exposure or known breach in PPE → prophylaxis
- Waste disposal



World Health Organization

Swine flu

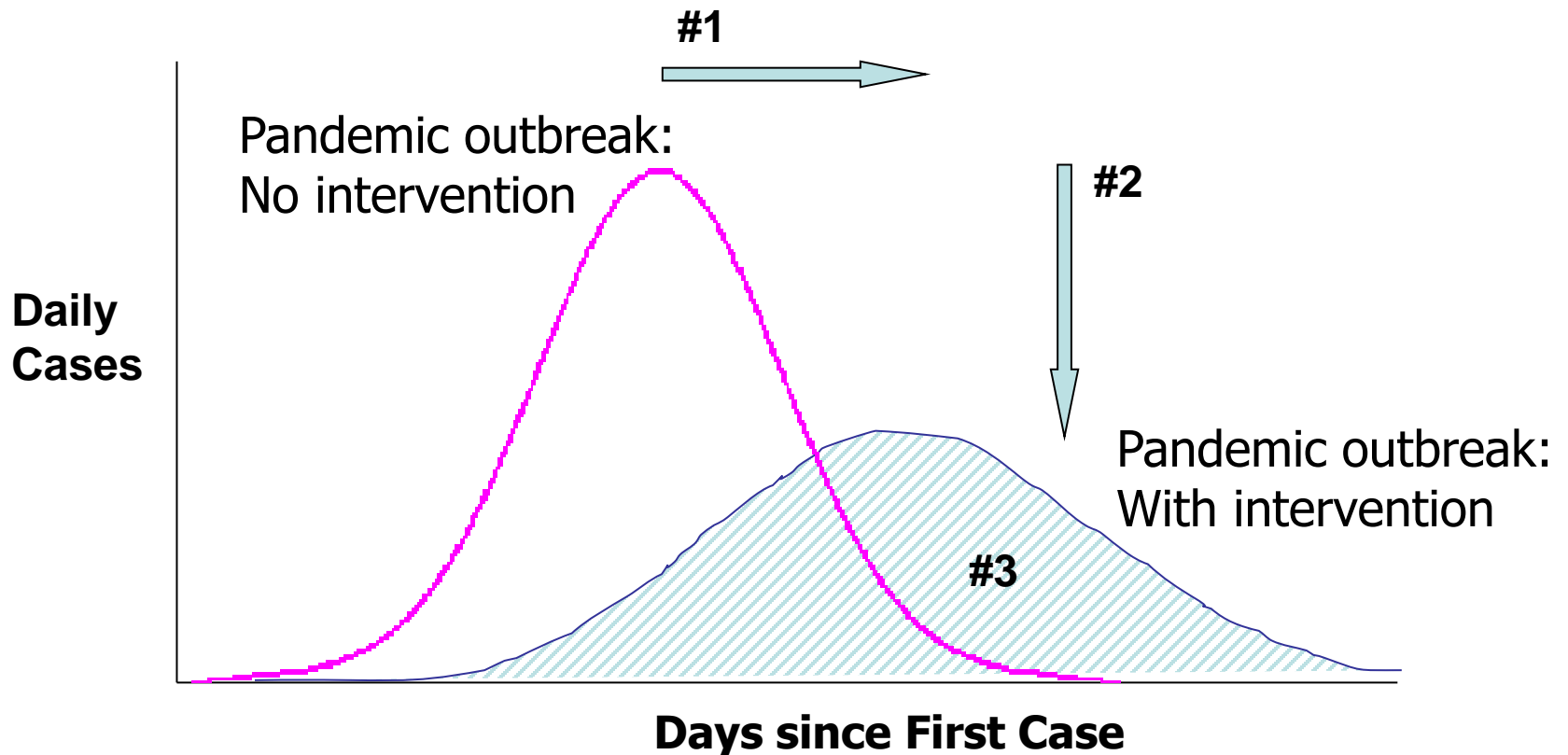
**The entire purpose is to
limit exposure**



Non-pharmaceutical Interventions

World Health Organization

1. Delay disease transmission and outbreak peak
2. Decompress peak burden on healthcare infrastructure
3. Diminish overall cases and health impacts





World Health Organization

Cough etiquette

Stop the spread of germs that make you and others sick!

Cover your Cough



Put your used tissue in the waste basket



Clean your Hands

after coughing or sneezing.



Wash with soap and water

or clean with alcohol-based hand cleaner.



- Respiratory etiquette
 - Cover nose / mouth when coughing or sneezing
- Hand washing!



Ministry of Health
Department of Health Services
1000 - 10th Avenue, S.W.
Edmonton, Alberta T6A 6G1





World Health Organization

Voluntary Isolation

- Separation and restricted movement of *///* persons with contagious disease (often in a hospital setting and Primarily individual level)
 - Isolate severe and mild cases
 - Location of isolation (home, hospital) depends on several factors (severity of illness, the number of affected persons, the domestic setting)
 - Do not wait for lab confirmation
 - Plan for large number of severe cases
 - Provide medical and social care



World Health Organization

Voluntary Quarantine

- Separation and restricted movement of *well* persons presumed exposed
 - Identification of contacts
- Often at home, but may be designated residential facility or hospital
- Applied at the individual or community level
- Regular health monitoring is essential part of quarantine
 - Self-health monitoring and reporting



World Health Organization

Hand Washing

Method

- Wet hands with clean (not hot) water
- Apply soap
- Rub hands together for at least 20 seconds
- Rinse with clean water
- Dry with disposable towel or air dry
- Use towel to turn off faucet



World Health Organization

Alcohol-based Hand Rubs

- Effective if hands not visibly soiled
- More costly than soap & water

Method

- Apply appropriate (3ml) amount to palms
- Rub hands together, covering all surfaces until dry

Protecting yourself from the flu

While there are treatments for swine flu, the best medicine is prevention. Here are a few tips to protect yourself against swine flu, as well as seasonal influenza.

Avoid close contact with people who are sick.

Stay home when you are sick. You will help prevent others from getting sick.

Cover your mouth and nose when coughing or sneezing.

Wash your hands frequently to prevent the spread of germs.

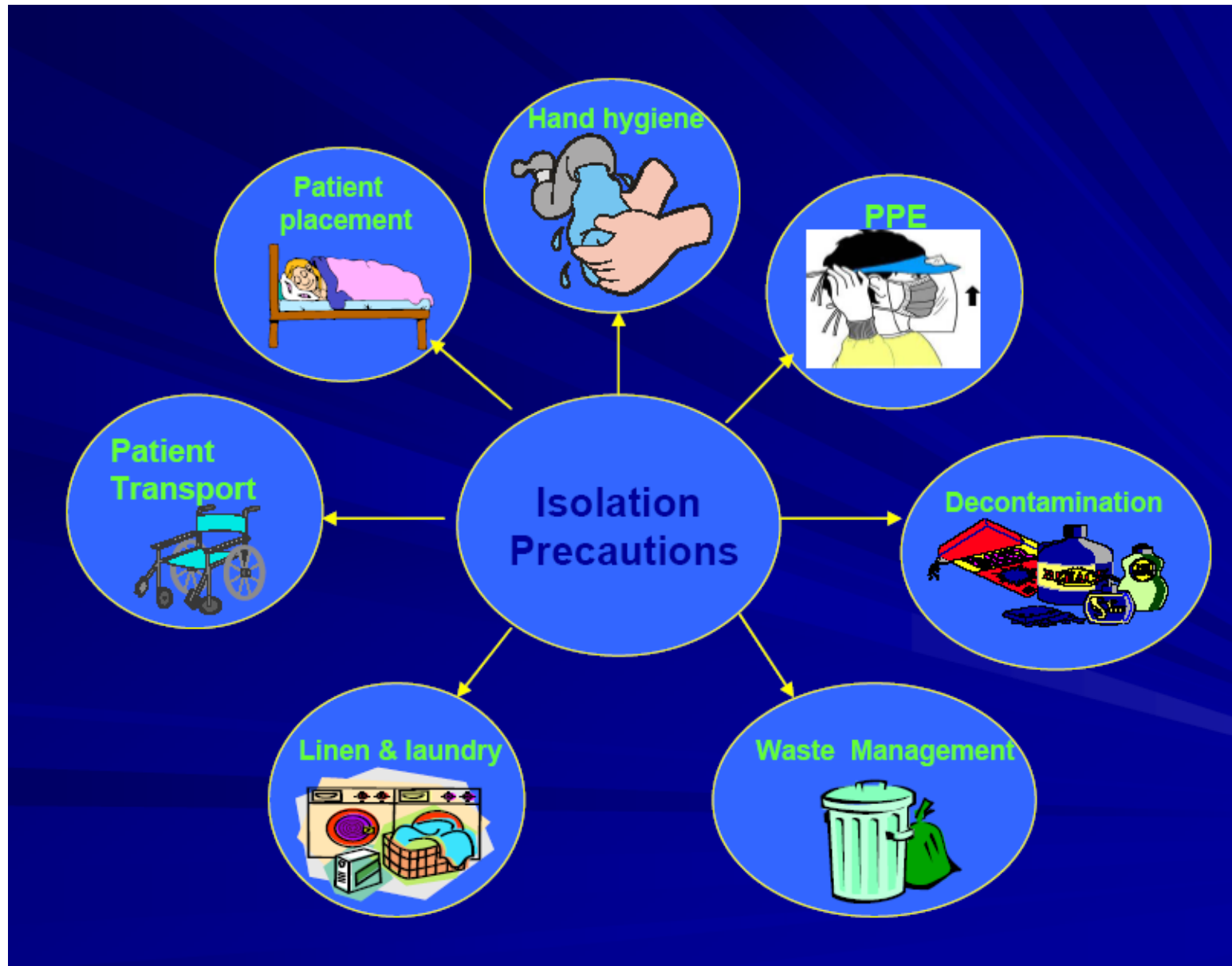
Avoid touching your eyes, nose or mouth to avoid germs or infection.

Practice other good health habits like getting plenty of sleep, being physically active and eating well.

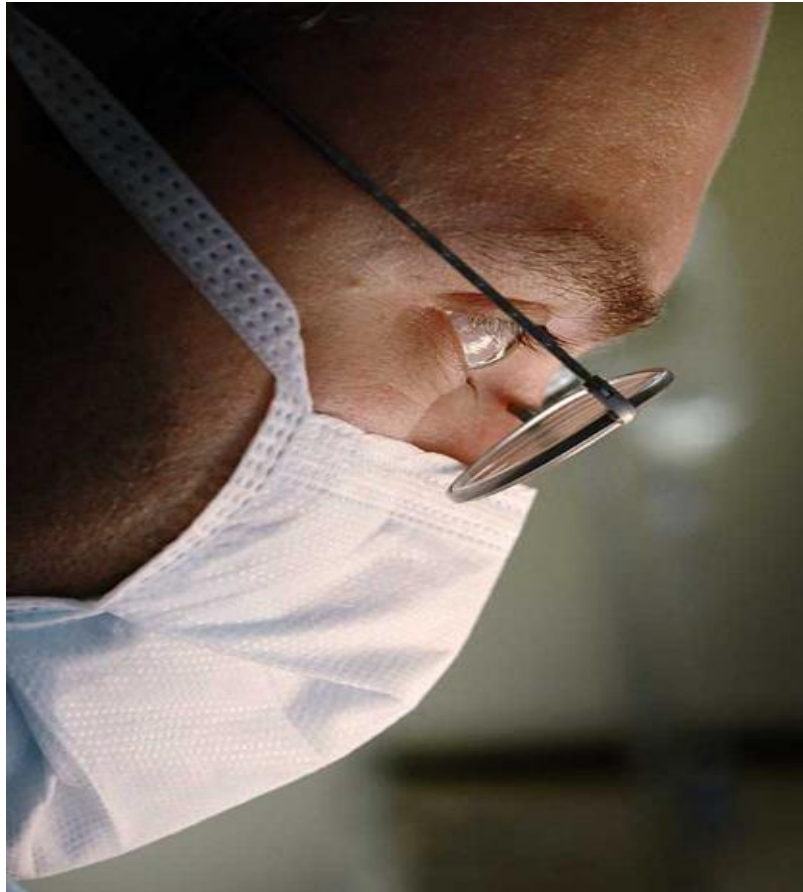
Patients Cared for at Home

- Potential for transmission
- Must educate family caregivers
- Fever / symptom monitoring
- Infection control measures
 - Hand washing
 - Use of available material as mask ...

Isolation Precautions



Droplet precautions: Surgical Masks



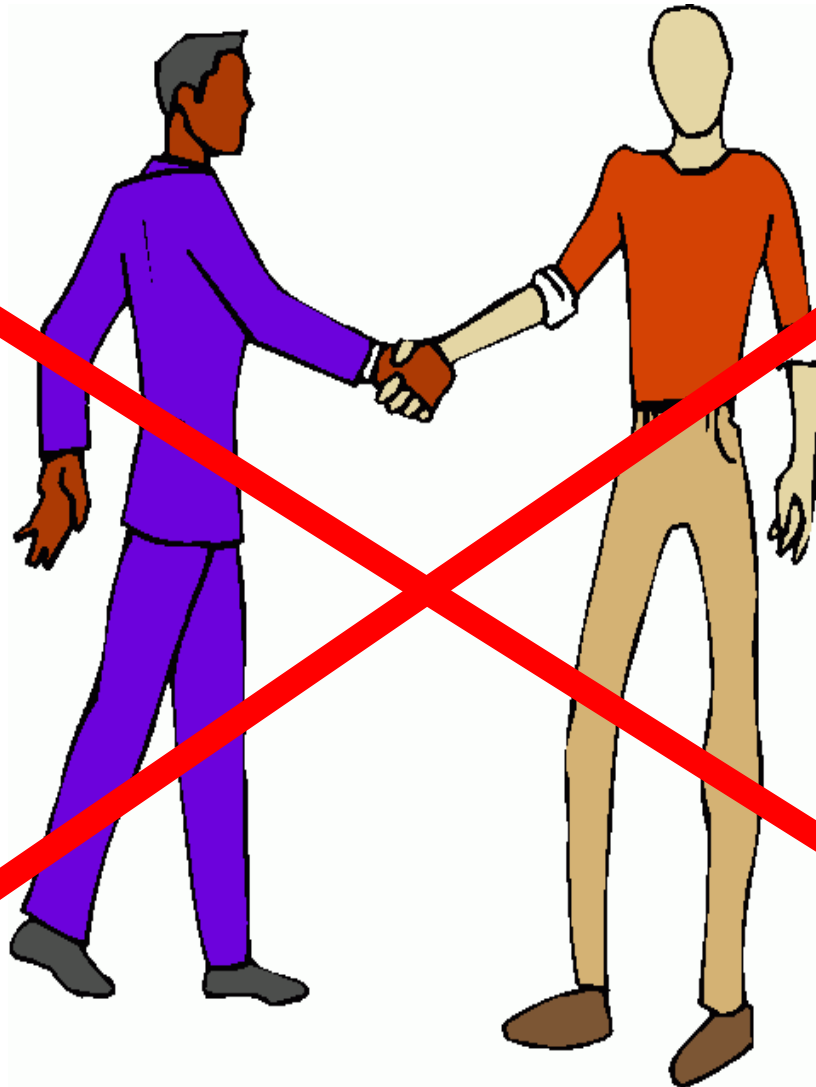
Source: Rosie Sokas, MD MOH UIL at
Chicago

N-95 Filtering Masks

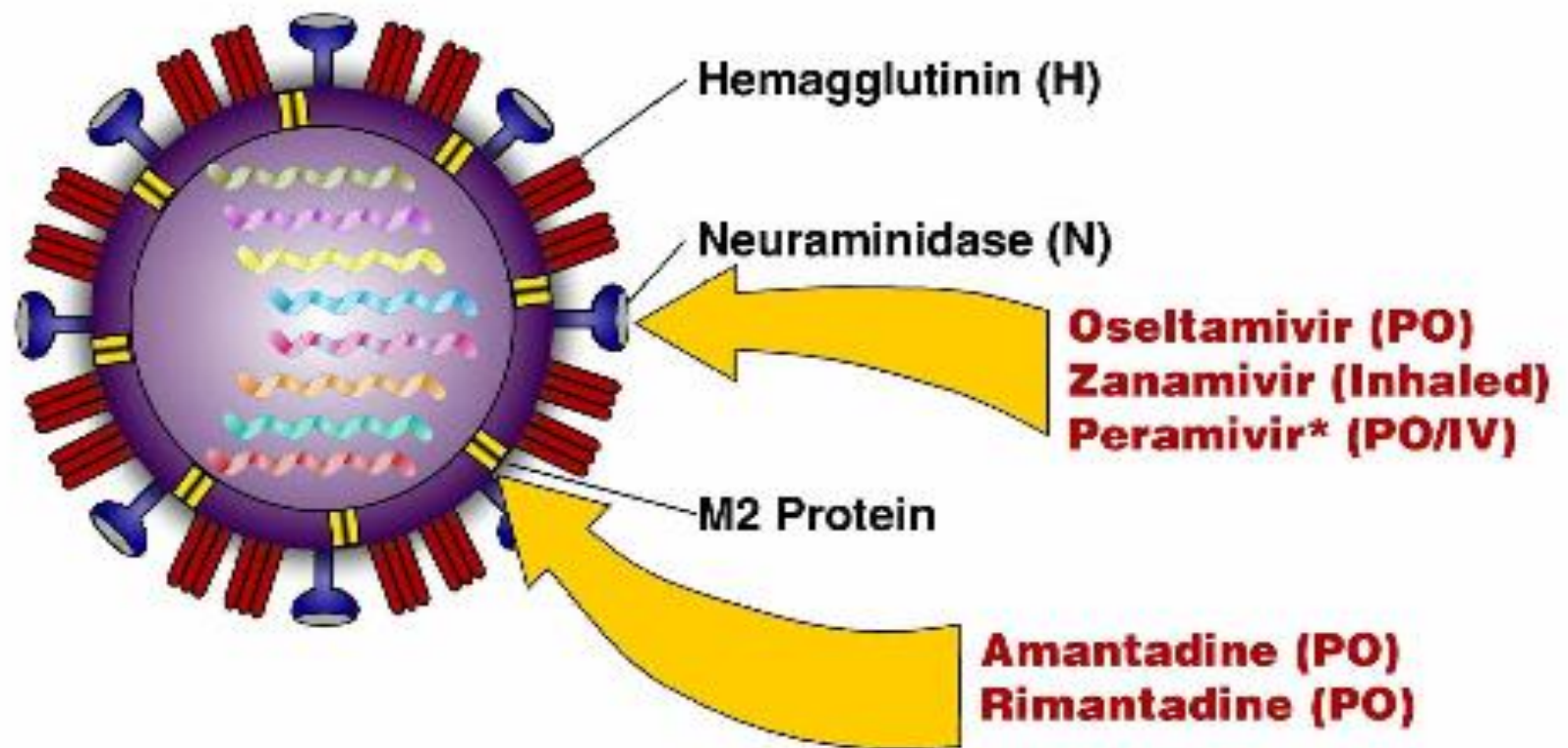


Personal Protective Equipment (PPE)





Antiviral Therapies for Influenza



*Investigational



World Health Organization

Antivirals- Oseltamivir

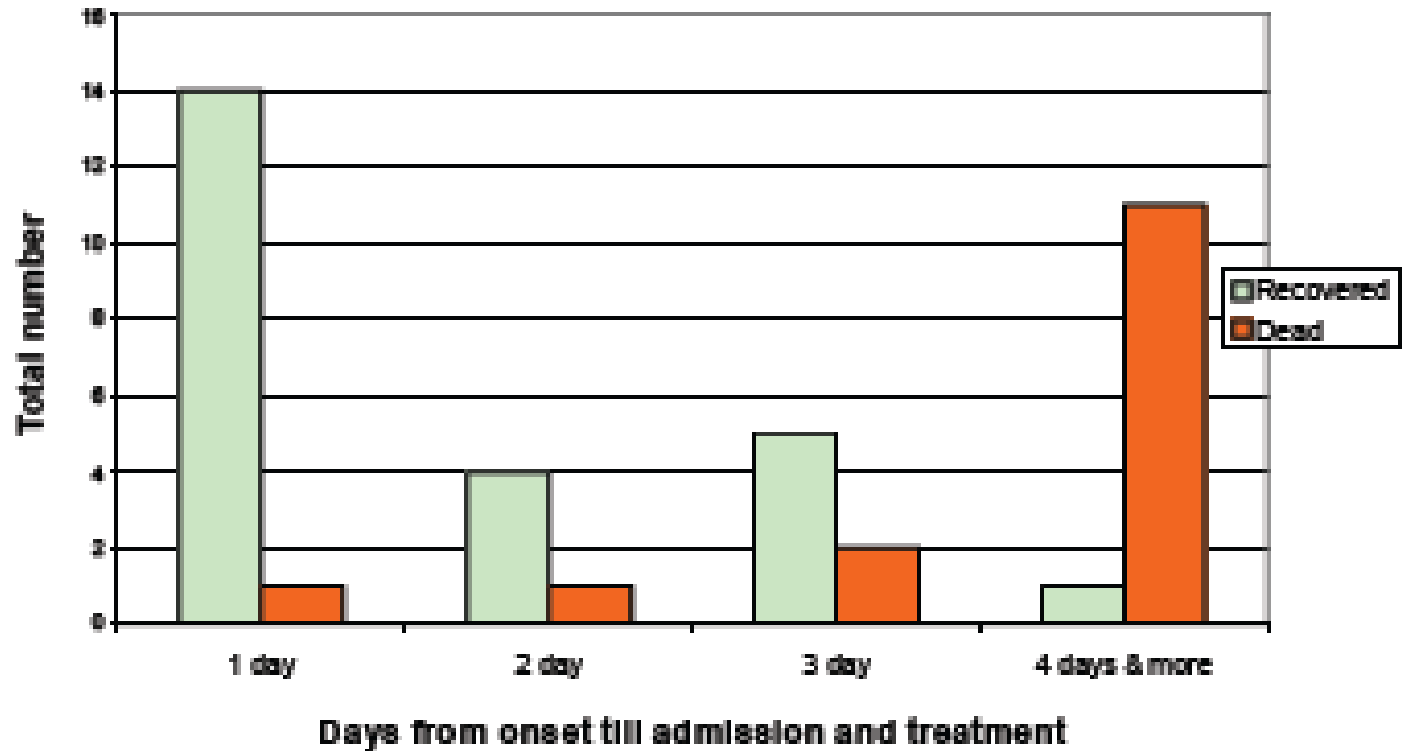
- Treatment is 75 mg twice a day for 5 days (wt 40 kg or more)
- Prophylaxis is 75 mg once a day for 7 days after last exposure.
- Prophylaxis:
 - High risk exposure (household contacts)
 - Moderate risk (unprotected very close exposure to sick animals; HCW with unprotected exposure to patients)
 - Low risk exposure: no need for prophylaxis unless activation of exceptional measures.



World Health Organization

Importance of the Early Treatment

Prognosis and days before treatment



Abdel-Nasser Abdel-Ghafar, Egyptian MOH, unpublished data



World Health Organization



Thank you

