

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the name of **ALLAH**
the most Beneficent and the most merciful



COMMUNICABLE DISEASES-3

INFLUENZA

INFLUENZA

- Influenza is an acute respiratory tract infection caused by influenza virus
- There are three types of this virus - A, B and C
- All known pandemics of influenza were caused by influenza A strain

INFLUENZA

- The disease is characterized by sudden onset of chills, malaise, fever, muscular pain and cough
- Influenza is truly an international disease
- It occurs in all countries and affects million of people every year

INFLUENZA

- It may occur in pandemics every 10-40 years
- However there may be outbreaks of influenza practically every year and sometimes even twice a year

INFLUENZA

- The unique features of influenza epidemics are the suddenness with which these arise and the speed and ease with which these spread

INFLUENZA

- All of the following factors favor its rapid spread
 - a. Short incubation period
 - b. Large number of subclinical cases
 - c. High proportion of susceptible population
 - d. Short duration of immunity
 - e. Absence of cross immunity

INFLUENZA

- Worldwide, the annual epidemics are estimated to result in about 3-5 million cases of severe illness and about 250,000 to 500,000 deaths
- The fate of the virus during inter-epidemic periods is not known

INFLUENZA

- Possible explanations include transmission of virus to extra human reservoirs (pigs, horses, birds), latent infection in humans or continuous transfer from one human to another. This explains the occurrence of sporadic cases

INFLUENZA

- At present three types of influenza viruses are circulating in the world: A(H₁N₁), A(H₃N₂) and B viruses
- WHO global surveillance activities have identified human infection with a new influenza virus called A(H₅N₁) in Hong Kong in mid 1997

INFLUENZA

- More recently influenza A(H1N1) virus of swine origin emerged in Mexico during the spring of 2009 and was given name – pandemic influenza A (H1N1) 2009 virus. It spreads with travelers worldwide, resulting in the first influenza pandemic since 1968

INFLUENZA

AVIAN INFLUENZA (BIRD FLU) H₅N₁

It refers to a large group of different influenza viruses that primarily affect birds. On rare occasions, these bird viruses can infect other species, including pigs and humans. The vast majority of avian influenza viruses do not infect humans

INFLUENZA

AVIAN INFLUENZA (BIRD FLU) Continued.....

Avian H5N1 is a strain with pandemic potentials, since it might ultimately adapt into a strain that is contagious among humans. Since mid-2003, this virus has caused the largest and most severe outbreaks in poultry on record.

INFLUENZA

AVIAN INFLUENZA (BIRD FLU) Continued.....

In December 2003, infections in people exposed to sick birds were identified. Since then, over 100 human cases have been confirmed and more than half of these people have died. Most of these cases have occurred in previously healthy children & young adults

INFLUENZA - AGENT FACTORS

a) **AGENT:** Influenza viruses are classified within the family Orthomyxoviridae. There are three types A, B and C. These three viruses are antigenically distinct. Types A and B are responsible for epidemics of disease.

INFLUENZA - AGENT FACTORS

(AGENT) Influenza A virus has 2 distinct surface antigens: the Haemagglutinin (H) & Neuraminidase (N) antigens. The currently identified subtypes are 16 HA and 9 NA.

Humans are generally infected by viruses of subtypes H₁, H₂, H₃ and N₁, N₂

INFLUENZA - AGENT FACTORS

The influenza A virus is unique among the viruses because it is frequently subject to antigenic variation, both major and minor. When there is a sudden complete or major change, it is called a shift, and when the antigenic change is gradual over a period of time, it is called a drift

INFLUENZA - AGENT FACTORS

b) RESERVOIR OF INFECTION:

A major reservoir of influenza virus exists in animals and birds. Many influenza viruses have been isolated from a wide variety of animals and birds (e.g. swine, horses, dogs, cats, wild birds and domestic poultry)

INFLUENZA - AGENT FACTORS

c) SOURCE OF INFECTION: Usually a clinical or subclinical case. Mild and asymptomatic cases play an important role in the spread of infection during epidemics. The secretions of the respiratory tract are infective

INFLUENZA - AGENT FACTORS

d) PERIOD OF INFECTIVITY: Virus is present in the nasopharynx from 1-2 days before and 1-2 days after the onset of symptoms

INFLUENZA - HOST FACTORS

(a) AGE AND SEX:

Influenza affects all ages and both sexes. Attack rate is lower among adults. The highest mortality, during an epidemic occurs among certain **high risk groups** such as old people, children under 18 months, persons with diabetes or chronic heart disease, kidney disease & respiratory ailments

INFLUENZA - HOST FACTORS

(b) HUMAN MOBILITY: This is an important factor in the spread of infection

INFLUENZA - HOST FACTORS

(c) **IMMUNITY:** Immunity to influenza is sub-type specific. It can be incomplete & reinfection can occur. Antibodies against HA and NA are important in immunity to influenza. Protection correlates with both serum antibodies and secretory IgA antibodies in nasal secretions. Serum antibodies persist for 8-12 months.

INFLUENZA - ENVIRONMENTAL FACTORS

- (a) SEASON:** The seasonal incidence is striking, epidemics usually occurring in winter months
- (b) OVER-CROWDING:** It enhances transmission. The attack rates are high in close population groups e.g. schools, institutions, ships etc.

INFLUENZA

TRANSMISSION

It is from person to person, by droplet infection or droplet nuclei created by sneezing, coughing & talking. Portal of entry of virus is respiratory tract

INCUBATION PERIOD

It is 18-72 hours

INFLUENZA - CLINICAL FEATURES

The symptoms are generalized weakness, fever, chills, cough, aches and pains. Fever lasts for 1-5 days.

Frequent complications are acute sinusitis, otitis media, purulent bronchitis and pneumonia. The most dreaded complication is **pneumonia**, which should be suspected if fever persists beyond 4-5 days or recurs abruptly after convalescence

INFLUENZA

Reye syndrome (fatty liver with encephalopathy) is a rare and severe complication of influenza, usually B type particularly in young children with 30% mortality rate.

The syndrome is associated with aspirin use in a variety of viral infections

INFLUENZA

DIAGNOSIS

It can be confirmed by VIRUS ISOLATION from nasal and pharyngeal secretions & SEROLOGY - Haemagglutination Inhibition (HI) and ELISA

INFLUENZA - PREVENTION

It can be accomplished by;

1. Good ventilation of public buildings
2. Avoiding crowded places during epidemics

INFLUENZA - PREVENTION

3. Encouraging sufferers to stay at home and cover the face with a handkerchief while coughing and sneezing
4. Immunization; offers the best prospect of controlling influenza at the present times

INFLUENZA - PREVENTION

VACCINES are recommended for certain selected population groups

- i. In industry to reduce absenteeism
- ii. In public servants to prevent disruption of critical public services e.g. police, transport, fire protection and medical care

INFLUENZA - PREVENTION

(**VACCINES** are recommended for certain selected population groups)

iii. The elderly

iv. Individuals suffering from chronic or debilitating diseases to avoid severe complications including death

INFLUENZA - PREVENTION

(**VACCINES** are recommended for selected population groups)

- v. HIV infected persons can also be vaccinated
- vi. Killed/Inactivated vaccine, given as a single dose of **0.5 ml S/C or I/M**, is recommended annually

INFLUENZA - PREVENTION

vii. Prevention of exposure to avian influenza strains also includes hygienic practices during handling of poultry products, hand washing, prevention of cross contamination as well as thorough cooking to more than 70 degree C of poultry products

INFLUENZA - ANTIVIRAL DRUGS

Because of limitations in the efficacy of influenza vaccines, antiviral drugs have been tried for the prophylaxis and therapy of seasonal influenza infections

Two neuraminidase inhibitors (Zanamivir & Oseltamivir) are available for prophylaxis and therapy of influenza A & B

INFLUENZA - ANTIVIRAL DRUGS

The dose of Oseltamivir is 75 mg twice daily for 5 days for therapy and 75 mg daily for prophylaxis

Zanamivir is administered by inhaler (10 mg dose) and is given twice daily for therapy and once daily for prophylaxis

The duration of therapy depends upon clinical setting

Thank you

