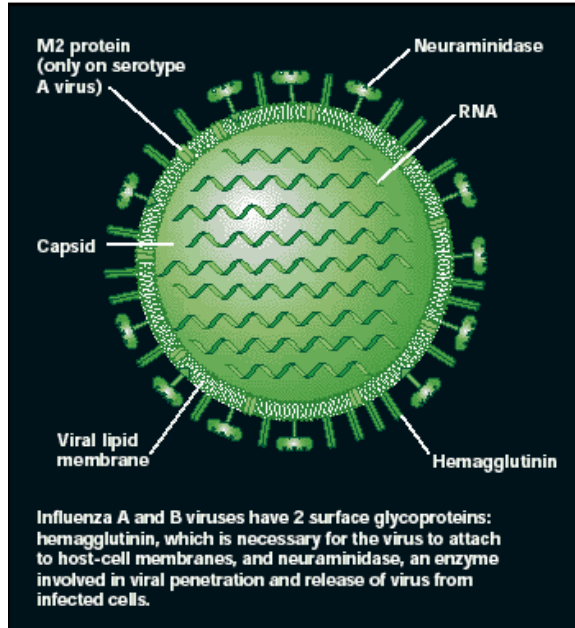
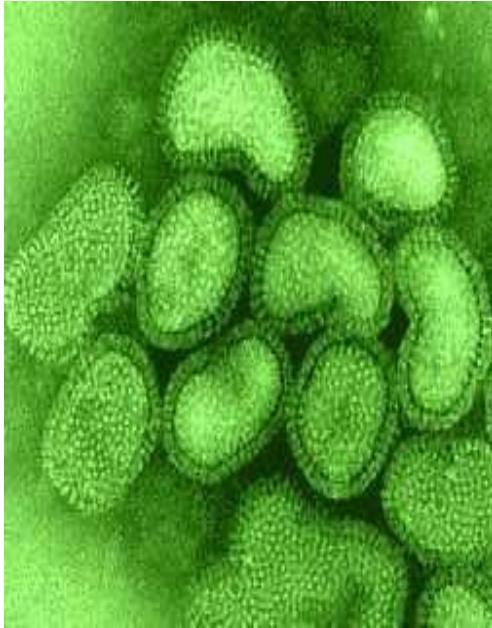


1. Virology of Influenza

Segmented and enveloped, spherical RNA virus



Taxonomy

Family	Orthomyxoviridae		
Genus	Influenza Virus		
Types (based on Nucleo Protein and M Capsid Protein)	Type A	Type B	Type C
Sub Types or Serotypes (based on hemagglutinin (H) and the neuraminidase(N) 18 H and 11 N H1-18 N1-11	The subtypes based on the combination of H and N proteins: H1N1, H1N2, H2N2, H3N1, H3N2, H3N8, H5N1, H5N2, H5N3, H5N8, H5N9, H7N1, H7N2, H7N3, H9N2, H10N7 Infect multiple species; Human, Avian, Swine, equine etc.	No subtypes 2 lineages: Victoria and Yamagata Infect humans	No subtypes Infect humans and pigs

<p>Genetic Plasticity</p>	<p>Undergoes mutation that can take place within the genome (Antigenic drift)/or re-assortment among the genetic materials of subtypes (Antigenic Shift) resulting in a new virus.</p> <p>Antigenic Drift is responsible for new seasonal strains that makes necessary surveillance to detect these strains and to update vaccine composition for new seasonal influenza vaccine(biannually)</p> <p>Antigenic Shift may result in a new virus easily transmissible from man to man or which the population has no immunity :Results in Pandemics</p>	<p>Antigenic variations are infrequent but Re-assortants are known</p>	<p>Antigenically stable</p>
<p>Public Health Importance</p>	<p>Causes Pandemics</p> <ul style="list-style-type: none"> • Spanish Flu[A(H1N1)] 1918-19; • Asian Flu[A(H2N2)]1957-59; • Hong kong Flu [A (H3N2)] 1968-68; • “Swine Flu” [A (H1N1)] 2009-10 <p>Causes Epidemics, seasonal Influenza outbreaks and sporadic cases.</p>	<p>Causes Epidemics</p> <p>Seasonal Influenza</p>	<p>Causes mild respiratory disease</p> <p>Does not Cause epidemic</p>

2. Epidemiology of Seasonal Influenza (Seasonal Flu)

Agent Factors	Agent	Presently circulating strains [A (H1N1)2009; Circulating seasonal influenza A(H3N2) and Influenza B]
	Reservoir of Infection	Humans
	Source of infection	Case or sub-clinical case
	Communicability	3-5days from clinical onset in adults; Upto 7days in young children Peak viral shedding occurs on day1 of symptoms (Preclinical shedding of virus during late incubation cannot be ruled out).
	Incubation Period	1-2days
Host Factors	Age and sex	All ages ;incidence higher in extremes of ages /both sex
	High Risk	Children aged less than 5 years especially <2 years of age, old age; Pregnant mothers, Health workers, Co-morbid conditions (Lung disease, heart disease, liver disease, kidney disease, blood disorders, Diabetes); Immuno-compromised; long term steroid therapy treatment.
	Immunity	No cross-immunity between different sub-types/strains. Antibodies appear in 7days after an attack; reach maximum Level in 2weeks; drops to pre-infection level in 8-12months
Environmental Factors	Seasonality	India usually witnesses two peaks <ul style="list-style-type: none"> • Jan- Mar • Post monsoon Season (Aug – Oct) However, it may vary from State to State
	Overcrowding	Mostly affect urban and peri-urban areas. Rural areas are not spared
	Closed populations	High attack rates may be witnessed in Army Barracks, College hostels, Schools, religious congregation or gatherings. Residential hostels of schools, aircrafts, ships etc.
Disease Transmission	Airborne	Droplets from infected human beings;
	Contact	Direct contact/contact with fomites