

Glossary: Influenza Vaccines

Adjuvant	One or more agents that are added to a vaccine to increase and/or direct the immune response to an antigen e.g., alum (aluminium hydroxide and aluminium phosphate)
Amantadine	An antiviral (M2 inhibitor) indicated for the treatment of illness due to influenza A and for prophylaxis following exposure to influenza type A viruses
Annual/seasonal vaccines	The particular strain of influenza viruses circulating in the human population often change and a trivalent vaccine is produced annually based on the strains recommended by the WHO and other authorities (see trivalent vaccines). There are flu vaccines produced specifically for the Northern Hemisphere and others for the Southern Hemisphere Their composition can change from season to season.
Antibiotic	Medicines designed to kill bacteria and to treat and prevent bacterial diseases and infections. Antibiotics are not used to prevent or treat influenza (which is a virus not a bacterium) but may be used to treat secondary bacterial infections, such as pneumonia, that may occur as a complication of influenza infection
Antigen	Any substance derived from a microorganism and used in a vaccine to stimulate an immune response
Antigenic drift	A change of the hemagglutinin or neuraminidase proteins on the surface of a particular strain of the influenza virus due to spontaneous mutations (called genetic plasticity).It occurs on an ongoing basis in both type A and type B influenza strains and necessitates ongoing changes in the composition of influenza vaccines.
Antigenic shift	An abrupt change in the hemagglutinin and/or the neuraminidase protein type on the surface of a particular strain of influenza virus, causing a new subtype of the virus to suddenly emerge. Occurs only in type A influenza.
Antiviral	An agent used to kill or suppress the growth of viruses, including influenza. Antivirals are not vaccines
API	Active Pharmaceutical Ingredient
Pandemic Vaccine (candidate pandemic vaccine)	A pandemic vaccine can truly only be made once a pandemic takes place and the causative influenza strain is identified. In the meantime the development of a prototype or candidate pandemic vaccine (ie one which is produced by the same manufacturing process proposed for the pandemic vaccine) is a fundamental step in influenza pandemic preparedness (see mock-up vaccines)
Cell culture vaccines	Vaccines produced in populations of individual cells (tissue culture) grown in the laboratory using flask, roller-bottle or fermenter/bio-reactor technology
Cell mediated	Immunity that involves T and B lymphocytes
Correlates of protection	Correlates of protection are a measurable sign that individuals developed an immune response that correlates with or predict protection against the disease.
Cross-protection	The protection conferred on a host against infection with one strain of a virus that prevents also infection by a closely-related strain. A vaccine with good cross-protection can protect against several possible strains of the virus.

Flu shot	Colloquial term for the administration of a influenza vaccine.
Haemagglutinin (H)	A protein on the surface of the influenza virus that helps it attach to a cell in the respiratory tract and subsequently penetrate it. Referred to as the 'H' in the identification and labelling of influenza subtypes and strains
Herd immunity	Indirect protection of unvaccinated individuals against a given disease due to immunity of a large proportion of the surrounding group against the respective pathogen based on the blocking of transmission.
Humoral immune response	Immune responses mediated by antibody. Antibodies are produced by B cells.
Immune system	The cells, tissues and organs that help the body to resist infection and disease by producing antibodies and/or altered cells that inhibit the multiplication of the infectious agent.
Immunogenic	Capable of inducing an immune response
Immunological memory	The ability of the immune system to react more strongly to a second or subsequent exposure to a particular antigen (or sometimes antigenic variant) compared to the response achieved on first exposure
Inactivated split virus vaccines	Influenza vaccine consisting of fragments of virus particles obtained through chemical treatment (e.g., by detergent splitting). This splitting also inactivates the virus.
Inactivated whole virus vaccines	Influenza vaccines consisting of whole virus particles that have been rendered non-infectious by treatment with a chemical agent (e.g., by formalin treatment)
Infectious agent	Any organism, such as a pathogenic virus, parasite, or bacterium, that is capable of invading body tissues, multiplying, and causing disease
Influenza type A	A category of influenza virus characterized by specific internal proteins and further subgrouped according to variations in their two surface proteins (hemagglutinin and neuraminidase). It infects animals as well as humans and has caused the pandemic influenza infections occurring in this century
Influenza type B	A category of influenza virus characterized by specific internal proteins that only infects humans, causes less severe clinical illness than type A, and spreads in regional rather than pandemic outbreaks
Influenza type C	A category of influenza virus characterized by specific internal proteins. It does not cause significant clinical illness
Influenza-Like Illness (ILI)	Acute onset of respiratory illness with fever and cough and one or more of the following symptoms: sore throat, arthralgia, myalgia or prostration which could be due to influenza
Isolate	In microbiology, a pure specimen obtained by culture
Mock-up dossier	Use of the prototype vaccine as mock-up template to validate the methods of production that will be use when the needed strain is identified. This speeds up the production of the pandemic vaccines since methods are already validated by regulatory authorities (see candidate pandemic vaccine/prototype vaccine)
Monovalent vaccines	A vaccine that contains one strain only, versus a vaccine containing multiple strains (e.g. annual seasonal tri-valent vaccines)
Mutation	A permanent, transmissible change in the genetic material of a cell or micro-organism. This change may be disease causing or

	a benign, normal variant. Specific mutations and evolution in influenza viruses cannot be predicted.
Neuraminidase	An important surface structure protein of an influenza virus particle, which enables the release of the virus from the host cell to infect new cells within the respiratory tract. Used to identify and label subtypes and strains of influenza viruses.
Neuraminidase inhibitors (NAIs)	NAIs are designed to specifically target the influenza virus and to prevent viral replication inside the body by targeting one of the two surface structures of the influenza virus - the neuraminidase protein, which enables the virus to continue to infect host cells. When neuraminidase is inhibited, the virus is unable to exit the host cell and dies. Therefore, the virus is not able to spread to and infect other cells in the body. NAIs are effective against both influenza A and B viruses
NISN	Neuraminidase Inhibitor Susceptibility Network, a network established in 1999 to follow the susceptibility of influenza isolates and occurrence of neuraminidase inhibitors (NAI), oseltamivir and zanamivir, resistance at a population level in selected areas of the globe
Oseltamivir	An oral antiviral medicine used in the treatment and prevention of influenza. Oseltamivir belongs to a group of medicines called neuraminidase inhibitors (NAIs) and is designed to be active against all clinically relevant influenza viruses
Pandemic vaccine	A vaccine composed of antigens from the viral strain causing the pandemic. By definition those vaccines can only be produced once the pandemic strain has been identified.
Pathogenicity	The virulence or capability of a pathogen to cause disease. Based on this, avian influenza strains are divided into two groups: low pathogenic (LP) and highly pathogenic (HP)
Post-exposure prophylaxis	The administration of antiviral drugs after an individual has come into close contact with someone who is suspected of having influenza, in order to attempt to block or reduce infection
Pre-pandemic Vaccine	A pre-pandemic vaccine is one that has been produced using strains considered most likely to cause a pandemic, in this case H5N1 (bird flu). Once a pandemic has been declared by WHO and the final pandemic strain identified, it is hoped that the immunity developed in response to the pre-pandemic virus vaccine will 'prime' or prepare the immune system in readiness for encountering the actual pandemic virus strain.
Protective Immunity	The ability of the immune system to mount a response which protects the individual from becoming infected and/or developing disease in response to a foreign organism
Reactogenicity	The capacity to produce adverse reactions
Reagent	A substance used in a chemical reaction to detect, measure, examine or produce other substances
Reassortants	Influenza viruses of different origins (by strain or by species) can swap segments of gene to create a new strain, a 'reassortant', that has characteristics of each original virus. Viruses containing two or more pieces of nucleic acid (segmented genome) from different parents. Such viruses are produced in cells co-infected with different strains of a given virus.
Resistance	The development of strains of a pathogen which are able to withstand the effects of an antimicrobial or antiviral agent.
Respiratory	Structures contained in the respiratory system, including the

tract	nasopharynx, oropharynx, laryngopharynx, larynx, trachea, bronchi, bronchioles, and lungs
Reverse genetics	A laboratory technique based on molecular biology methods to produce a virus variant that grows well in eggs and has selected external characteristics (e.g of the circulating wild type virus). When this technique is used to prepare pandemic strains, such as H5N1, the haemagglutinin is firstly genetically modified to remove pathogenicity to produce a non-pathogenic vaccine reference strain
Rimantadine	An antiviral (M2 inhibitor) indicated in adults for the treatment of illness due to influenza and for prophylaxis following exposure to influenza type A viruses
Seroconversion	The development of detectable specific antibodies to microorganisms in the serum as a result of infection or immunization.
Stockpile	A reserve supply of medicines, supplies and equipment necessary to manage an emergency situation.
Subtype	A classification of influenza type A viruses based on the surface antigens haemagglutinin (H) and neuraminidase (N)
Transmissibility	(see viral shedding)
Trivalent vaccines	A vaccine that contains three strains of virus which is the case of the annual or seasonal flu vaccines (see also "monovalent vaccines")
Type	A classification of influenza viruses based on characteristic internal proteins
Viral shedding	The expelling of virus particles from the body, one route for which is through the respiratory tract. Virus shedding is an important means of transmission, however evidence of virus shedding does not necessarily equate to transmissibility
Virus	One of a group of microscopic infectious agents, usually pathogenic, that replicates itself only within cells of living hosts.
Virus Strain	A genetic subtype or variant of a virus. Different influenza strains can be readily identified based on two membrane glycoproteins: haemagglutinin (H) and neuraminidase (N) e.g. H5N1, H9N2 etc.
Yield	Yield is a measure of the productivity of each vaccine strain in bulk production
Zanamivir	An antiviral medicine used in the treatment of influenza. It is a neuraminidase inhibitor and effective against both influenza A and B viruses. Zanamivir is administered using a dry powder, inhaler device.