

A Note on Types of Influenza Virus

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DESCRIPTION

The influenza virus mostly affects the respiratory system, including throat, nose and lungs. Influenza is also referred as "the flu," but it is different from other diseases. Mostly flu passes away on its own. In some situations, however, influenza and its complications can be deadly. The following are some of the most common flu signs and symptoms: Fever, sweats and chills, muscle aches, coughing that is dry and persistent, headache, breathing problems, weakness and exhaustion, a stuffy or runny nose, throat irritation, pain in the eyes, vomiting and diarrhea are frequent in children, but they are less prevalent in adults. The four types of influenza viruses are A, B, C, and D. Human influenza A and B viruses cause seasonal epidemics of disease (known as flu season) in the United States almost every winter. The influenza-A virus has been known to cause pandemics or widespread flu epidemics. A pandemic can occur when a new and atypical influenza-A virus emerges that both infect people and can spread quickly among them. Infections with the influenza C virus usually produce only moderate disease and are not considered to cause human epidemics. Influenza D viruses are mostly found in cattle and are not known to infect or sicken humans.

Influenza A virus subtype is determined by two proteins present on its surface: hemagglutinin and neuraminidase. There are 18 distinct subtypes of hemagglutinin and 11 different subtypes of neuraminidase (H1 through H18 and N1 through N11, respectively). While more than 130 influenza A subtype combinations have been detected in nature. The process through which influenza viruses exchange gene segments is known as reassortment. When two influenza viruses infect the same host at the same time and swap genetic information, this is known as reassortment. A(H1N1) and A(H3N2) are two subtypes of influenza A viruses that are currently circulating in individuals (H3N2). Subtypes of influenza A can be further divided into genetic "clades" and "sub-clades. Clades and sub-clades are often referred to as "groups" and "sub-groups," respectively. An influenza clade or group (beyond subtypes or lineages) is a further

subdivision of influenza viruses based on the closeness of their HA gene sequences. Clades and subclades are groups of viruses on phylogenetic trees that exhibit comparable genetic alterations (such as nucleotide or amino acid variations) and a single common ancestor shown as a node in the tree. Experts can track the proportion of viruses from distinct clades in circulation by dividing viruses into clades and subclades. It's important to note that clades and sub-clades that are genetically distinct from one another aren't always antigenically different. The simplest way to understand this is to first know the terms "antigens" and "antigenic characteristics. Flu viruses have hemagglutinin and neuraminidase surface proteins, as stated earlier. These proteins act as antigens. Antigens are molecular structures found on the surface of viruses that the immune system recognizes and responds to (such as antibody production). The "antigenic features" of a virus are a reflection of the antibody or immunological response produced by its antigens. When two flu viruses differ antigenically, it indicates that the immune response (antibodies) produced by infection or vaccination with one of the viruses will have a harder time recognising and neutralising the other virus. As a result, for antigenically distinct viruses, immunity generated against one virus does not necessarily protect against the other.

CONCLUSION

Influenza B viruses are separated into two lineages: B/Yamagata and B/Victoria. They are not categorised into subtypes. Influenza B viruses, like influenza A viruses, can be further categorised into particular clades and sub-clades. Influenza B viruses, particularly influenza A(H3N2) viruses, modify their genetic and antigenic features more slowly than influenza A viruses. Surveillance data from recent years reveals that influenza B viruses from both lineages are co-circulating in the United States and across the world. The proportion of influenza B viruses from each lineage that circulates, on the other hand, varies by geographical area and season. In compared to flu B/Victoria viruses, flu B/Yamagata viruses have spread substantially less often in recent years.

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