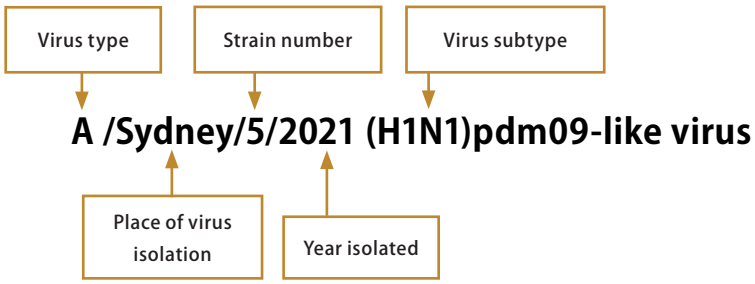
THE PATHCARE NEWS

UNDERSTANDING SEASONAL INFLUENZA VIRUS TYPES

Seasonal influenza is caused by influenza viruses which circulate worldwide, resulting in acute respiratory disease, predominantly during the winter months. Influenza virus is an enveloped virus with a segmented RNA genome. Laboratory and surveillance reports state the type and often the subtype of the influenza virus.

Naming of influenza viruses



What do the types and subtypes of influenza viruses mean?

There are 4 types of influenza viruses, types A, B, C and D, of which influenza A and B are the most important in human infection and disease (Table 1).

Influenza A viruses are further classified into subtypes according to the combinations of the hemagglutinin (HA) and neuraminidase (NA) proteins on the surface of the virus. At least 18 subtypes of HA, (H1 - H18) and 11 subtypes of NA, (N1 – N11) have been identified. However, only 3 haemagglutinin subtypes (H1, H2 and H3) and 2 neuraminidase subtypes (N1 and N2) have circulated consistently in the human population.

Influenza viruses are constantly changing. Antigenic drift refers to small gene changes continually occurring during virus replication that leads to small HA and NA changes. These changes may accumulate over time, eventually resulting in antigenically different viruses. Antigenic shift is a major abrupt change in influenza A virus, resulting in new HA and/or NA combinations and possibly a new subtype. Shift occurs when two different influenza viruses co-infect a host and swap gene segments. Since most people will not have immunity to the new virus, a pandemic can occur. Luckily these are rare, with only four influenza pandemics in the past century. Globally, influenza viruses are continuously monitored to identify potential new risks to humans.

Table 1: Types and characteristics of influenza viruses

Influenza Type	Host range	Disease potential	Subtypes currently circulating in humans
A	Humans, mammals, birds	Seasonal epidemics Pandemic potential (rare)	A(H1N1) * A(H3N2)
B	Humans	Seasonal epidemics	Not classified into subtypes but can be divided into lineages: B/Yamagata B/Victoria
C	Humans	Mild infections not of public health importance	N/A
D	Cattle	Not known to infect or cause human infection	N/A

*The A(H1N1) is also written as A(H1N1)pdm09

Why is the term "swine flu" a misnomer?

In 2009 Influenza A (H1N1)pdm09 emerged from pigs and caused a human pandemic. The virus has informally been referred to as "swine flu". Influenza A (H1N1)pdm09 has subsequently replaced the seasonal influenza A(H1N1) which had circulated prior to 2009. This subtype causes infection and disease just like any other seasonal influenza virus and requires no specific management or prevention methods. Healthcare workers and the public should not use the term "swine flu" as it is incorrect, implies influenza in pigs and causes unnecessary panic within the general population.

Does the type or subtype of influenza virus influence patient management?

No. All cases of influenza are managed the same way.

Are specific public health measures required for any of the influenza viruses?

No. Prevention measures remain the same irrespective of influenza virus type or subtype.

Does the available flu vaccine protect against all the circulating influenza viruses?

Yes. The influenza vaccine is updated yearly, separately for both the Southern and Northern hemispheres.
The strains included are based on surveillance of the circulating strains. The current quadrivalent vaccine provides protection against:

- A /Sydney/5/2021 **(H1N1)pdm09-like** virus;
- A/Darwin/9/2021 **(H3N2)-like** virus;
- B/Austria/1359417/2021 **(B/Victoria lineage)-like** virus;
- B/Phuket/3073/2013 **(B/Yamagata lineage)-like** virus**

** Not included in trivalent vaccine

Influenza vaccination has numerous benefits. Several studies have proven that influenza vaccine; reduces illness severity in vaccinated people who get sick, reduces the risk of flu-associated hospitalization, can be lifesaving in children, and protects both pregnant women and their newborns during their first months of life. Influenza vaccines have also been proven to prevent exacerbation of chronic health conditions such as chronic obstructive pulmonary disease (COPD) and protect the vulnerable within the community.

The influenza vaccine is ideally administered before the start of the flu season. However, it is never too late to vaccinate during the flu season.

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