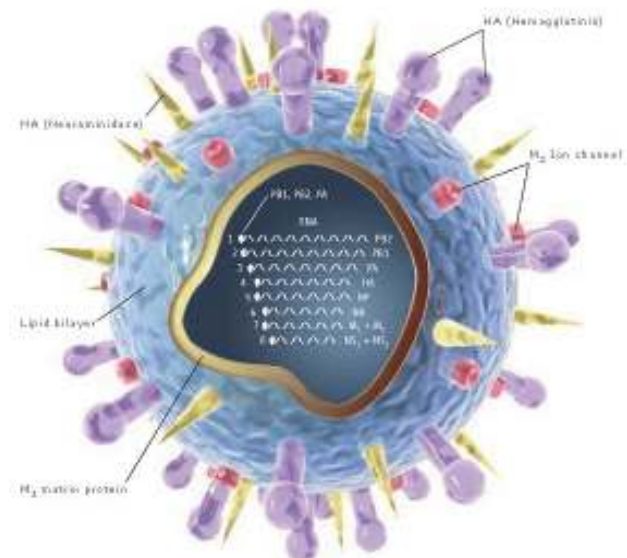


## Swine flu: What's new?

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Every year, especially during winter a large proportion of the population catch an acute respiratory disease, namely seasonal flu. Flu is an infection of human beings and many animal species.

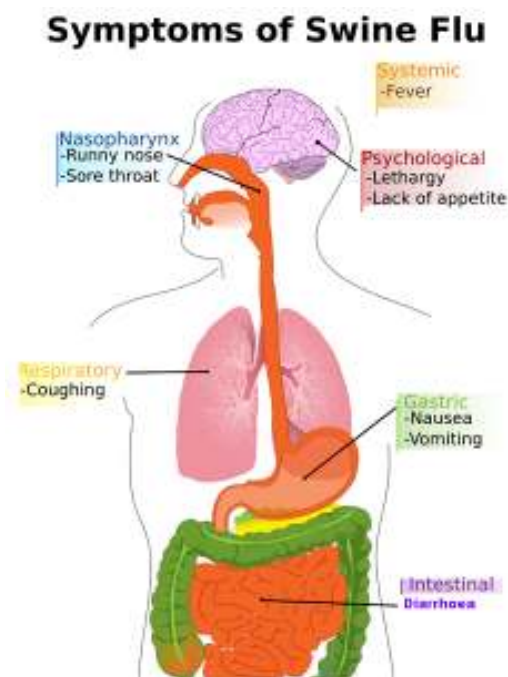
Flu or influenza is caused by viruses which belong to the Orthomyxoviridae family. There are three types of influenza viruses A, B and C. The type A is the most pathogenic of all. They are negative sense single stranded RNA viruses.



Flu, whether seasonal, avian or swine is easily spread by the tiny droplets in a cough or sneeze into the atmosphere by an infected person. Direct contact with hands that are contaminated with the virus can also spread infection. Hence making it easy to catch and spread.

Flu spreads very rapidly and often becomes an epidemic or a global pandemic. Hence it is important for an infected person to wash their hands after cleaning their nose or sneezing.

Usually flu is accompanied by symptoms such as a high temperature that comes on quickly, and general aches and pains. Some patients may also experience a loss of appetite, nausea and a harsh dry cough.



The symptoms peak after 2 to 3 days and within 5 to 8 days the patient normally feels better. However, coughs and general tiredness may last for 2 to 3 weeks. On average, full symptoms are visible after 1 to 4 days after infections. The patients are usually infectious a day before symptoms occurs and up to 5 days after the start of symptoms. People with lowered immune system such as children and elderly may remain infectious for longer. It is best to avoid unnecessary contact with others during this infectious period.

Influenza viruses are able to infect humans, swine, and avian species, and swine have long been considered a potential source of new influenza viruses that can infect humans. Flu represents a health and economic threat to both humans and animals worldwide. Swine flu was first recognized clinically in pigs in the Midwestern U.S in 1918-19, coinciding with the human influenza pandemic known as the Spanish flu, which caused around 40-50 millions of deaths all over the world.

Since that time, swine flu has been very important for the swine industry worldwide, especially in the last 10 years where new subtypes and genetic variants have emerged making the control of swine flu difficult.

There have been several flu pandemics over the years with the major ones in 1918 (swine influenza), 1957 (Asian influenza), 1968 (Hong Kong influenza) and 1977 (Russian influenza).

These pandemics are due to major antigenic variation of the type **A** influenza virus. It is very common to have frequent epidemics after pandemics due to small antigenic changes of the pandemic virus strains. Minor antigenic variant strains of type **A** (H1N1), **A** (H3N2) and type **B** influenza viruses are currently circulating globally, causing frequent epidemics.

It has been suggested that influenza A viruses can escape the immune response in the human by 3 different ways namely: (1) by antigenic drift: where mutations and selections of variants occur under the pressure of the immune system. During the antigenic drift, there is amino acid replacement in the epitopes of the haemagglutinin. The second way is by (2) antigenic shift, where the haemagglutinin gene of the prevailing human strain is replaced by a similar gene of avian influenza origin.

A third controversial and rare event called reassortment is where there is direct or indirect introduction of an avian influenza virus into the human population. The segmented structure of the viral RNA allows genetic exchange between different influenza viruses. Consequently, new variants of viruses are produced with different combinations of genome segments and hence with new biological properties. However, it is very rare to have influenza viruses that can overcome the species barrier. This is because only genetically stable virus variants will succeed as they can replicate efficiently in the new host. It is considered likely that pigs act as intermediate hosts for adaptation of avian viruses to man.

The present 2009 swine flu outbreak in human is caused by a new strain of influenza A virus subtype H1N1 that contain genes which are closely related to swine influenza. Up to now, the origin of this strain is unknown and according to a press on the 27<sup>th</sup> of April 2009 release from the World Organisation for Animal Health there is “no current information in influenza like animal disease in Mexico or the USA could support a link between human cases and possible animal cases including swine. The virus has not been isolated in animals to date. Therefore, it is not justified to name this disease swine influenza.” This strain can be transmitted from human to human and has clinical presentation like influenza.

In order to recognize a pandemic strain as soon as possible a worldwide surveillance system and collaborating laboratories equipped with corresponding modern technologies are required.

Following expert consultations and available information, the Director General of WHO, Dr Margaret Chan has raised the current level of influenza pandemic alert from phase 4 to 5 on a scale of 1-6. She suggested that all countries should immediately activate their pandemic preparedness plans which include effective and essential measures include heightened surveillance, early detection and treatment of cases, and infection control in all health facilities. WHO has dispatched over a million treatment doses of the oseltamivir, which is an antiviral drug against flu including swine flu to all countries in the African Region to enhance their preparedness to handle initial cases.

## **CATCH IT**

Germs spread easily. Always carry tissues and use them to catch your cough or sneeze.



## **BIN IT**

Germs can live for several hours on tissues. Dispose of your tissue as soon as possible.



## **KILL IT**

Hands can transfer germs to every surface you touch. Clean your hands as soon as you can.



Courtesy NHS UK