

Microbe of the Month

Influenza

Influenza Virus

Transmission

The influenza virus is an enveloped RNA virus containing 8 segments of linear negative-sense single stranded RNA. It also contains a viral RNA dependent RNA polymerase enzyme for viral replication. The “spikes” on the virus include hemagglutinin (H) for attachment and neuraminidase (N) for viral release. Flu viruses spread mainly by droplets when contagious people cough, sneeze or talk. The virus can also be spread by touching fomites, a nonliving object that has flu virus on it, and then touching the mouth, eyes or nose.

One of the worst pandemics the world has known occurred in 1918. Estimates run as high as 50 million people killed in a matter of months. Why? Genetic changes created a new combination of H and N spikes on the virus that the population did not have immunity against. In the United States, schools and businesses closed down. Health laws were passed including wearing masks in public and a ban against spitting. Funeral parlors were overwhelmed. The human death toll was horrendous.

Treatment/ Prevention:

Prevention is the best strategy for viral infections. A flu vaccine is recommended every flu season. Flu vaccine can keep you from getting flu, lessen the symptoms if you do get it, and help prevent the spread to others. The flu vaccine is inactive and does NOT contain viable viruses so it cannot cause the flu. Each year a new flu vaccine is made to protect against 3-4 strains most likely to cause disease in the upcoming flu season. A universal vaccine against all influenza strains is being researched.

For further questions or concerns, please see your physician.
Reference: www.cdc.gov
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Signs/ Symptoms:



There are three main types of influenza virus that infect humans. Type C is a mild form that does not cause epidemics. Type A and B infect the nose, throat and lungs. Symptoms include:

- Fever/chills
- Cough
- Sore throat
- Runny or stuffy nose
- Muscle or body aches
- Headaches
- Fatigue

Influenza antigens undergo two types of changes known as antigenic shift and antigenic drift. RNA viruses tend to mutate more quickly than DNA viruses and these changes cause antigenic drift.

Influenza A viruses are associated with animal reservoirs, particularly birds. If an animal such as a pig is infected with multiple strains, a human virus and bird virus for example, reassortment of the genetic viral segments (8 per virus) may occur. This can produce a dramatic change known as antigenic shift. Pandemics have occurred as a result of antigenic shift.

You can infect others 1 day before symptoms develop and about a week after becoming sick. The average incubation is 2 days.