Did you know that there are three types of influenza virus?

All viruses (A, B, and C) can infect humans, although influenza C is much less common.

**Influenza A**: Most common genus of Orthomyxoviridae; has several serotypes depending on the alleles of surface proteins (HA and NA) displayed on the viruses.

**Influenza B**: Distinct from Influenza A as a separate genus of the family Orthomyxoviridae; evolves 2-3 times more slowly; only infects humans and seals.

Influenza viruses are “typed” according to their HA and NA surface proteins.

The HA, or *haemagglutinin*, protein binds to sialic acid residues on the cell being infected. Sialic acid residues are different between birds and people, which is why flu strains have host specificity.

The NA, or *neuraminidase*, protein cleaves newly-formed viral particles from the infected cell’s surface, allowing the virus to spread to new cells and other people.

**Why are there so many different strains of influenza?**

Influenza genomes are made up of 7 to 8 segments.

During viral replication inside the host cell, each of the genome segments must be replicated and repackaged into the new viral progeny.

Sometimes, a cell can be infected with two viruses at one time.

When the newly replicated viruses are being packaged, mixing of the genome segments can occur – this is called **reassortment**.

Genome sequence mutations can occur during every round of replication, and through reassortment, become shuffled around between viral strains.

Wild aquatic birds are the natural hosts for a large variety of Influenza A strains.

**Virology**

**RETURN OF INFLUENZA**

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This marked the 2nd worldwide pandemic of H1N1 influenza, following the 1918 outbreak. The strain resulted from the reassortment of bird, human, and swine flus with a Eurasian pig flu. As many as 294,500 individuals have died from this pandemic. H1N1 did not disproportionately infect adults 60 years of age and older.

The World Health Organization estimates that annual epidemics result in 3 to 5 million severe cases each year, with 250,000 to 500,000 deaths. About 90% of deaths occur in individuals 65 years and older. Influenza infections actually occur all year round, but reach peak prevalence in the winter months for each hemisphere – so there are two different flu seasons.

An estimated 20 to 40 million people died in the 1918 Spanish influenza outbreak.

Who is susceptible to influenza?
Anyone can become infected with influenza. Older people, young children, pregnant women, and people with certain health conditions are at higher risk for complications.

What are the symptoms of influenza?
Influenza is characterized by:
- Fever
- Cough and sore throat
- Runny or stuffy nose
- Muscle, head, or body aches
- Fatigue

How is influenza treated?
Neuraminidase inhibitor drugs zanamivir (Relenza®) and oseltamivir (Tamiflu®) are approved to treat both influenza A and B. The drugs block the neuraminidase enzyme which cleaves new viral particles away from infected cells, thus preventing viral spread.
2012-2013 Influenza season: What to expect

The trivalent vaccine is designed against the Influenza A (H1N1), Influenza A (H3N2), and Influenza B (2010-like) strains.

Manufacturers will produce about 150 million doses.

What if the prevalent virus doesn’t match the predicted types in the vaccine?

Even if you become infected with a flu virus that was not specifically targeted by the current vaccine, cross-reactivity can still protect you by reducing the severity of the infection.

Vaccines

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Influenza vaccinations promote community immunity, which protects the vulnerable.

What if the prevalent virus doesn’t match the predicted types in the vaccine?

Even if you become infected with a flu virus that was not specifically targeted by the current vaccine, cross-reactivity can still protect you by reducing the severity of the infection.

Will the vaccine give me influenza?

No, the inactivated virus cannot cause disease, and the weakened virus in the nasal spray can only infect cells in the nose where it is cooler – unlike the warmer lung environment.

You may feel a little sick, but this is just the activation of the body’s immune system.

Who should be vaccinated?

Everyone at least 6 months of age should get a flu vaccine, but especially:

- Pregnant women
- 65 years and older
- Medical conditions like asthma, diabetes, chronic lung disease

You should also get vaccinated if:

- You visit, live or work in a nursing home or long-term care facility.
- You live with or care for those at high risk for complications from influenza.

What else can you do to protect others from influenza?

40-50% of influenza infections are asymptomatic, and have only a 2 day incubation period.

Influenza virus is shed for 7 days, so patients should stay home for an entire week to minimize exposure to others.