Flu

THE SEASONAL PANDEMIC

What is the 'flu'?

Flu - short for influenza, which is an enveloped, single-stranded RNA virus that affects the respiratory system.

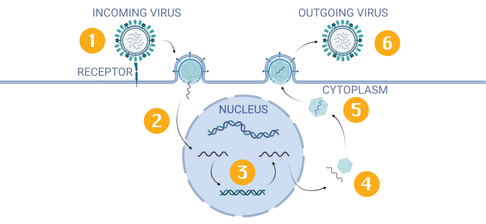
Common symptoms include runny nose, cough, and fever.

DID YOU KNOW?

Influenza strains get their names from two very important surface proteins:

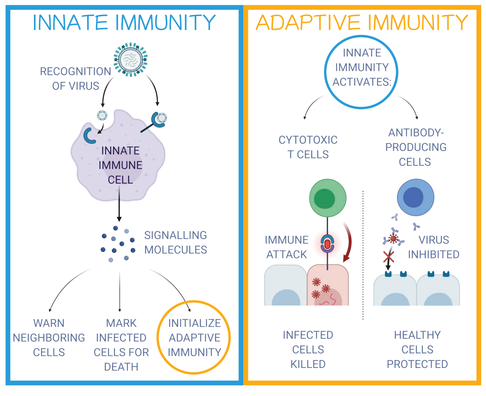
- Hemagglutinin (HA)
- Neuraminidase (NA)

What happens during an influenza infection?



1. Hemagglutinin (HA) binds to cell surface receptors that contain sialic acids and mediates the fusion of the viral and cellular membranes
2. Upon fusion, there is a release of viral particles into the host cell, which can then enter the nucleus
3. The negative-sense RNA (used by the virus) is transcribed into positive-sense mRNA (recognized by the host cell) that encodes the blueprints for viral components
4. The new mRNA is synthesized by the host cell into different viral components
5. The viral components assemble into a complete viral particle
6. Neuraminidase (NA) mediates the release of newly synthesized viruses from the host cell that can go on to infect other cells

How does our immune system combat this?



Why does the flu still cause severe disease in certain people?

Antigenic drift (mutations within the virus) and antigenic shift (mixing of genetic material between different viruses) can cause changes

Some viral components are poorly recognized by the immune system, allowing the virus to evade detection

Excessive signalling by the immune system can lead to tissue damage and organ failure

There are dimminished B and T cell responses in the elderly, while complications may arise with other underlying health conditions

So why should you get vaccinated?

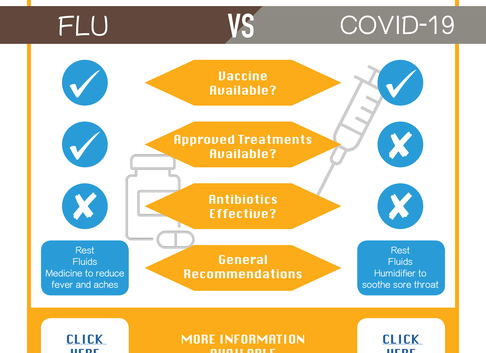
1. Protect vulnerable populations
2. Lower chance of flu-related hospitalizations
3. Annual vaccination = optimal protection!
4. Decreases the chance of death, ICU admittance, and severe respiratory illness associated with the influenza virus
5. Especially important for individuals with chronic and underlying health problems - such as COVID-19

DID YOU KNOW?

There are many common misconceptions about the flu vaccine. These include:

- The flu vaccine increases the risk for COVID-19
  FALSE! There is no correlation between them
- The flu vaccine is not effective
  FALSE! Though the exact effectiveness may vary, the vaccine still offers increased protection against the virus
- The flu vaccine will give me the flu
  FALSE! Side-effects may occur, but getting the flu through the vaccine is impossible

VIRUS SHOWDOWN



UNIVERSITY OF TORONTO

L. Leung, M. Kuypers, S. Sheikh-Mohamed, S. L. Tai
Immunology Graduate Student Association 2020-2021

Images created using BioRender.com