- Influenza



THE FLU & YOU

With flu season almost here, it's wise to understand its symptoms, how it affects the body and what you can do to stay healthy.

WORDS BY PIPPI SMITH

While there's lots of good things about May, such as the crisp days and changing colours, unfortunately it's also the start of flu season, which generally runs from now until around September, with a peak commonly occurring in August. Most of us are well aware of the signs and symptoms of flu including fever, headache, muscle pain and weakness, dry cough, sore throat and a stuffy nose. Yet what you may not be aware of is the complex series of reactions, both at the cellular and systemic level, your body is going through to fight the infection. These processes are part of your immune response to the influenza virus, which actually lead to the symptoms commonly associated with the flu.

Flu is caused by the influenza virus, a contagious pathogen that primarily affects the respiratory system, including the nose, throat, and lungs. There are different strains of the influenza virus, categorised by types A, B, C and D, with types A and B being responsible for seasonal flu epidemics.

The flu virus enters the body through the nose or mouth when someone infected with the virus sneezes, coughs, or talks. It can also spread through direct contact with surfaces contaminated with the virus (which is why washing your hands is so important). Once inside the body, the virus attaches to the cells lining the respiratory tract. The virus uses a protein called hemagglutinin to bind to receptors on the surface of these cells, and once attached, the virus enters the cell, where it starts replicating.

Before symptoms appear, the body starts fighting the flu virus as soon as it enters the body. The immune system reacts straight away by trying to identify and destroy the virus. The body's first line of defense involves physical barriers such as the skin and mucous membranes, as well as immune cells that are quickly recruited to the site of infection. New research from Stanford University is showing how smartwatches could provide a simple way to dramatically minimise the unwitting spread of diseases in pre-symptomatic people by recognising the markers of flu – from respiration to heart rate – several days before symptoms appear. "If people receive and act on an earlier warning by self-isolating, the impact is significant," says Professor Märt Vesinurm.

> "FLU IS CAUSED BY THE INFLUENZA VIRUS, A CONTAGIOUS PATHOGEN."

One of the first things your immune system does when it's being exposed to the virus is release cytokines. Cytokines are part of the body's inflammatory response and are essential for coordinating the immune system's efforts to combat the infection. The release of cytokines causes inflammation in the affected tissues, which contributes to common flu symptoms like sore throat, nasal congestion, and cough. This process is also responsible for the fever often associated with the flu. In response to the virus, the body raises its core temperature as part of the immune response, because many viruses, including the flu virus, replicate less efficiently at higher temperatures. Additionally, fever helps stimulate the production of certain immune cells, like white blood cells, and enhances their activity.

A fever can cause discomfort, but it is actually beneficial in helping the immune system fight off the infection. However, if the fever becomes too high, it can lead to complications, particularly in children, so it's important to monitor the fever and seek medical advice or manage it if necessary.

While the innate immune system provides an immediate response to the flu virus, the body also activates the adaptive immune system, which is slower but more specific and powerful. The adaptive immune response involves two primary types of white blood cells: T cells and B cells. B cells are responsible for producing antibodies, which are proteins that specifically recognise and neutralise pathogens.

T cells play another crucial role in the adaptive immune response. When they recognise a cell infected with the flu virus, they bind to the cell and induce its death, preventing further viral replication. T cells are particularly important in clearing the virus from the body, and the coordination of T cells and B cells ensures that the body is able to mount an effective defence. Sleep is key for boosting white blood cells, as does Vitamin D (sunshine) and Vitamin C (fruit and vegetables). A chemical in garlic, known as allicin, has also been shown to be beneficial to white blood cells.

FATIGUE AND WEAKNESS

The body's immune response requires a lot of energy, and the immune cells are constantly working to fight the infection. The release of cytokines and the increased energy demands of the immune system can make you feel extremely tired and weak, which is why rest is so key for recovery. Additionally, the body directs more blood and energy toward fighting the infection, which can leave you feeling drained and lethargic. Fatigue can persist even after other symptoms have resolved, as the immune system continues to recover from the strain of fighting the virus.

MUSCLE ACHES

Muscle aches are common during a flu infection. These aches are largely due to the release of inflammatory cytokines and the stress on the body caused by the infection. The inflammation associated with cytokines can affect muscles and joints, leading to body aches. Heat may provide some relief, such as a warm bath, or non-steroidal anti-inflammatory medications like ibuprofen.

COUGH AND CONGESTION

Cough and congestion are caused by the virus's effects on the respiratory tract. The virus can damage the epithelial cells that line the airways, causing irritation and inflammation. The body responds by producing mucus to help flush out the virus, leading to nasal congestion and a runny nose. The cough can be persistent and is the body's attempt to clear the airways of mucus and infected cells.

STAY HYDRATED

Fever, sweating and increased respiratory rate can lead to dehydration. Dehydration can worsen flu symptoms and complicate recovery, so it's important to stay hydrated by drinking plenty of water, broth, electrolyte drinks, herbal tea or soup.

https://www.pressreader.com/australia/mindfood/20250501/page/37 1/1