

The Deadliest Viruses Threatening Human Lives over the Last Century

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Over the course of the last century, many a pandemic have been seen, more often than not, caused by different kinds of viruses. In his presentation, we will talk about some such viruses.

SmallPox/Variola

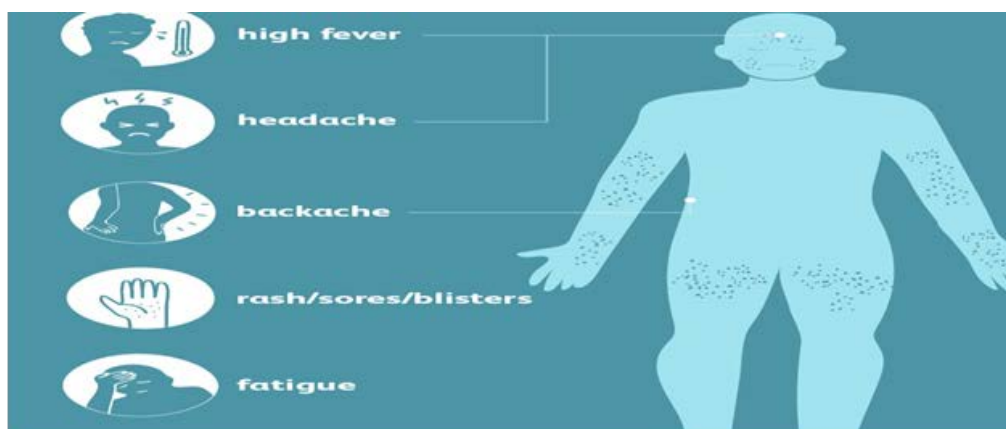
Smallpox is a contagious, disfiguring and often deadly disease that has affected humans for thousands of years, and is caused by the Variola virus. Naturally occurring smallpox was wiped out worldwide by 1980—the result of an unprecedented global immunization campaign.

Samples of smallpox virus have been kept for research purposes. And advances in synthetic biology have made it possible to create smallpox from published amino acid sequences. This has led to concerns that smallpox could someday be used as a biological warfare agent.

No cure or treatment for smallpox exists. A vaccine can prevent smallpox, but the risk of the vaccine's side effects is too high to justify routine vaccination for people at low risk of exposure to the small poxvirus.

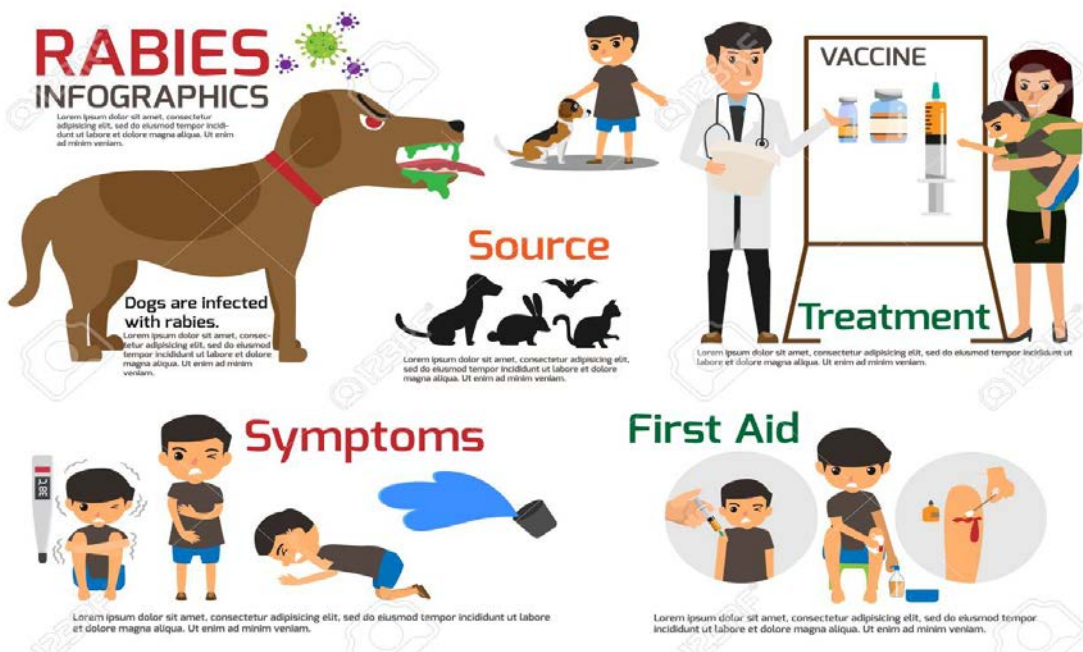
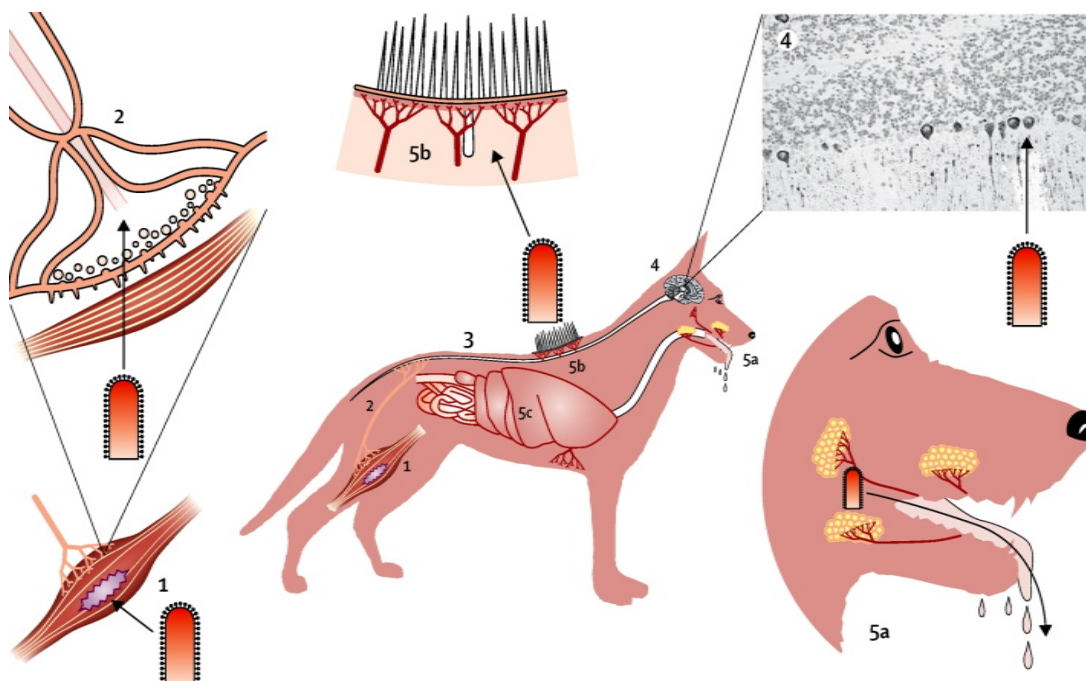


Signs and Symptoms of Small Pox



Rabies Virus (*Rabies lyssa virus*)

- ▶ Rabies is a deadly virus spread to people from the saliva of infected animals. The rabies virus is usually transmitted through a bite.
- ▶ Animals most likely to transmit rabies in the United States include bats, coyotes, foxes, raccoons and skunks. In developing countries, stray dogs are the most likely to spread rabies to people.
- ▶ Once a person begins showing signs and symptoms of rabies, the disease nearly always causes death. For this reason, anyone who may have a risk of contracting rabies should receive rabies vaccinations for protection.



HIV (Human Immunodeficiency Virus)



HIV (human immune deficiency virus) is a virus that attacks the body's immune system. If HIV is not treated, it can lead to AIDS (Acquired Immunodeficiency Syndrome).

Early HIV symptoms

The first 2-4 weeks after being infected with HIV, patient may feel feverish, achy, and sick. These flu-like symptoms are body's first reaction to the HIV infection. The symptoms only last for a few weeks, and then you usually don't have symptoms again for years. But HIV can be spread to other people — whether or not you have symptoms or feel sick.

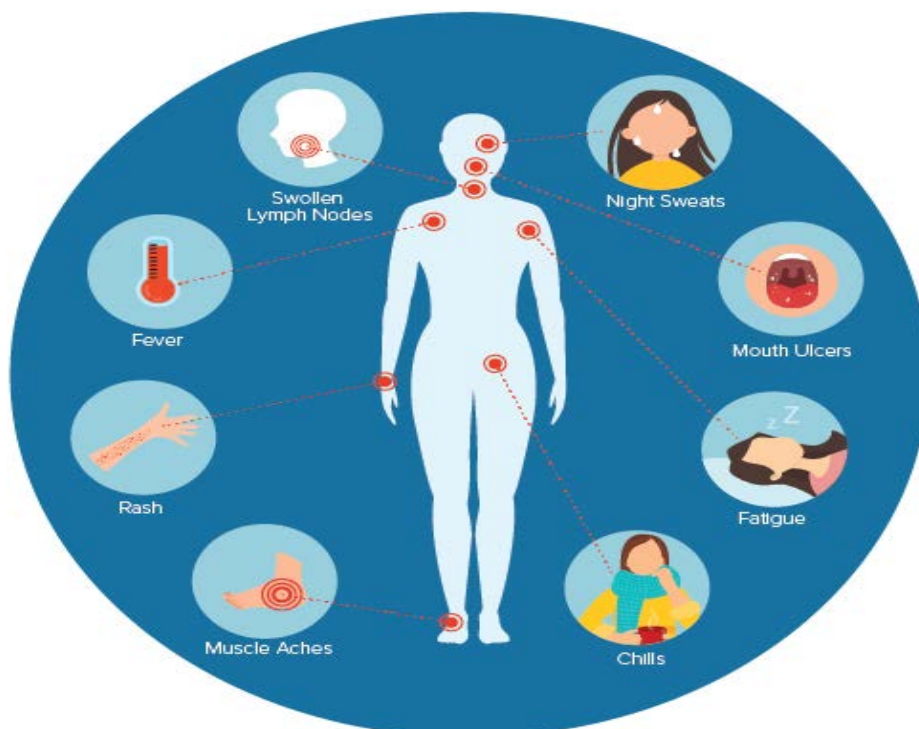
Later HIV/AIDS symptoms

HIV destroys CD4 or T cells in immune system. Without CD4 cells, body become weak for fighting off diseases. This makes more likely to get prone for the infections that usually wouldn't hurt. Over time, the damage HIV does to your immune system leads to AIDS.

HIV leads to AIDS when you get rare infections (called opportunistic infections) or types of cancer, or if there is a loss of a certain number of CD4 cells. This usually happens about 10 years after getting HIV in the absence of proper treatment. Treatment can delay or even prevent you from ever developing AIDS.

There is currently no effective cure. Once people get HIV, they have it for life.

But with proper medical care, HIV can be controlled. People with HIV who get effective HIV treatment can live long, healthy lives and protect their partners.

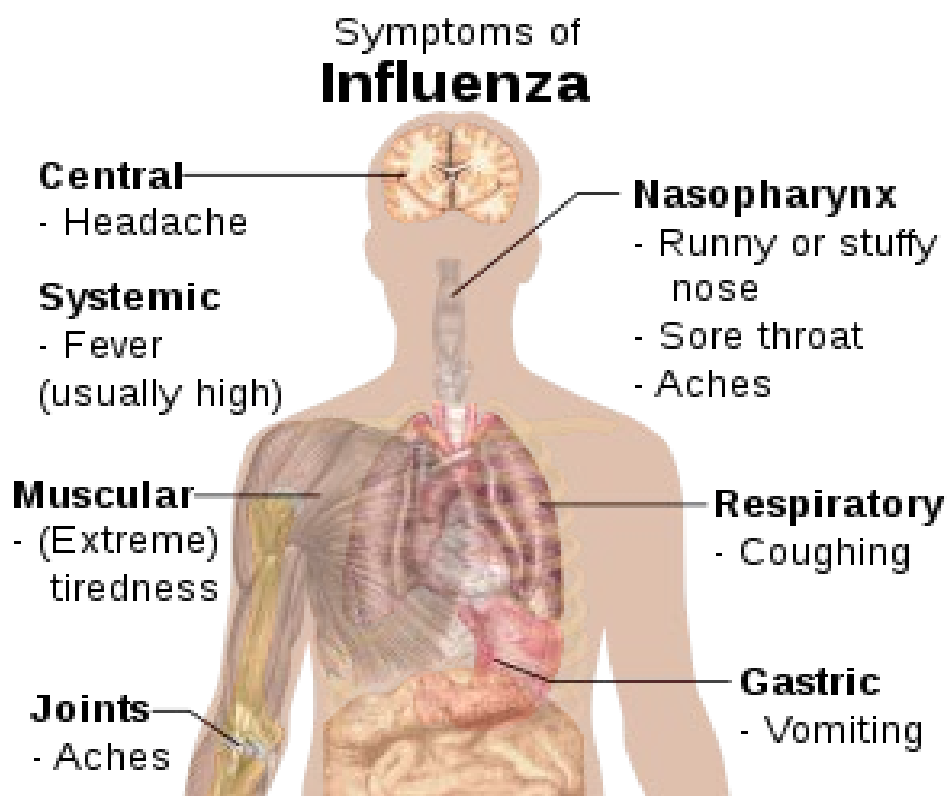


Influenza Viruses (Spanish Flu)

▶ World War I claimed an estimated 16 million lives. The influenza epidemic that swept the world in 1918 killed an estimated 50 million people. One fifth of the world's population was attacked by this deadly virus. Within months, it had killed more people than any other illness in recorded history.

▶ The plague emerged in two phases. In late spring of 1918, the first phase, known as the "three-day fever," appeared without warning. Few deaths were reported. Victims recovered after a few days. When the disease surfaced again that fall, it was far more severe. Scientists, doctors, and health officials could not identify this disease which was striking so fast and so viciously, eluding treatment and defying control. Some victims died within hours of their first symptoms. Others succumbed after a few days; their lungs filled with fluid and they suffocated to death.

▶ The plague did not discriminate. It was rampant in urban and rural areas, from the densely populated East coast to the remotest parts of Alaska. Young adults, usually unaffected by these types of infectious diseases, were among the hardest hit groups along with the elderly and young children. The flu afflicted over 25 percent of the U.S. population. In one year, the average life expectancy in the United States dropped by 12 years.



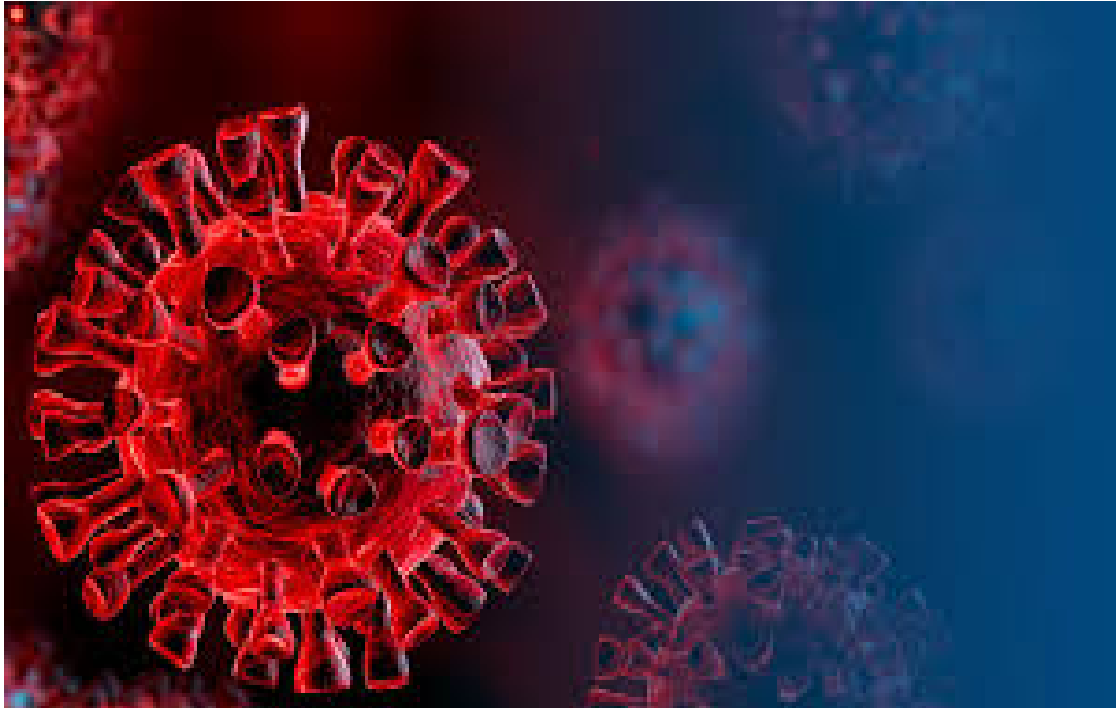
SARS-CoV-2

▶ **Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)** is the coronavirus that causes COVID-19 (coronavirus disease 2019), the respiratory illness responsible for the ongoing COVID-19 pandemic.

▶ First identified in the city of Wuhan, Hubei, China, the World Health Organization declared the outbreak a Public Health Emergency of International Concern on 30 January 2020, and a pandemic on 11 March 2020.

▶ It is believed to have zoonotic origins and has close genetic similarity to bat coronaviruses, suggesting it emerged from a bat-borne virus.

▶ Since then, many vaccines have been developed to fight against SARS-CoV-2, among which Covaxin and Covishield, developed in India have proved to be successful in slowing down the pandemic.



World Health Organization
Western Pacific Region

Common symptoms of COVID-19

- FEVER
- COUGH
- FATIGUE
- LOSS OF TASTE AND SMELL
- DIARRHOEA
- HEADACHE
- RASHES
- SORE THROAT
- ACHES AND PAIN
- CONJUNCTIVITIS

People infected with coronavirus, including Delta, can also be asymptomatic:
they may not show any symptoms.

27 October 2021

An infographic from the World Health Organization Western Pacific Region. It features a grid of nine icons representing common symptoms of COVID-19: fever, cough, fatigue, loss of taste and smell, diarrhoea, headache, rashes, sore throat, aches and pain, and conjunctivitis. To the right, a person wearing a face mask is shown, with text stating that people infected with coronavirus, including Delta, can also be asymptomatic. The date 27 October 2021 is at the bottom right.

Epidemics/ Pandemics	Disease	Death Toll	Date	Location
Small Pox Virus (Variola Virus)	Small pox	300-500 million deaths in the 20 th century	1967-1979 (Although prevalent in 19 th and 20 th centuries)	Worldwide
Rabies Virus (<i>Rabies lyssavirus</i>)	Rabies	59 000 human deaths annually	1987-1989	In over 150 countries, with 95% of cases occurring in Africa and Asia
HIV/AIDS global epidemic	HIV/AIDS	36.3 million (as of 2020)	1981-present	Worldwide
Influenza Viruses (H1N1)	Influenza A/ Spanish Flu	17-100 million	1918-1920	Worldwide
SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus-2)	COVID-19	5.4-21.4 million (as of December 2021)	2019-Present	Worldwide

Pandemic v/s Endemic

Pandemic

- ▶ The World Health Organization (WHO) declares a pandemic when a disease’s growth is exponential. This means growth rate skyrockets, and each day cases grow more than the day prior.
- ▶ In being declared a pandemic, the virus has nothing to do with virology, population immunity, or disease severity. It means a virus covers a wide area, affecting several countries and populations.

Endemic

- ▶ An endemic is a disease outbreak that is consistently present but limited to a particular region. This makes the disease spread and rates predictable.
- ▶ Malaria, for example, is considered an endemic in certain countries and regions.