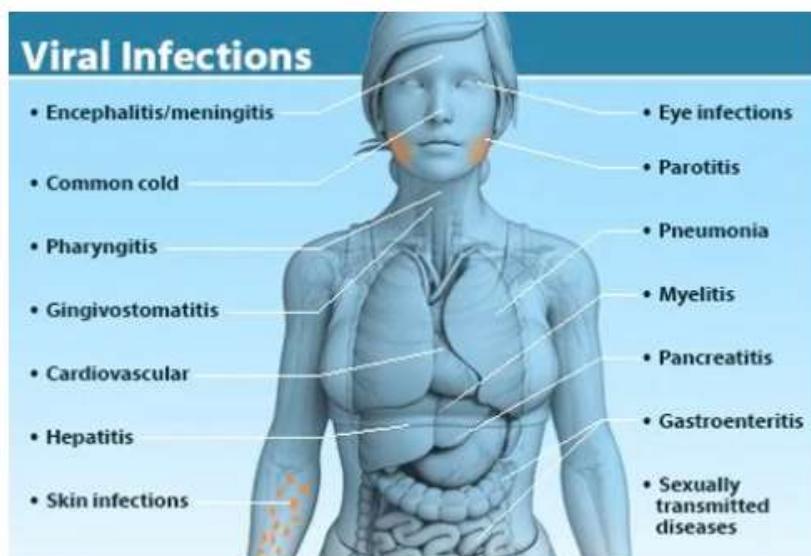
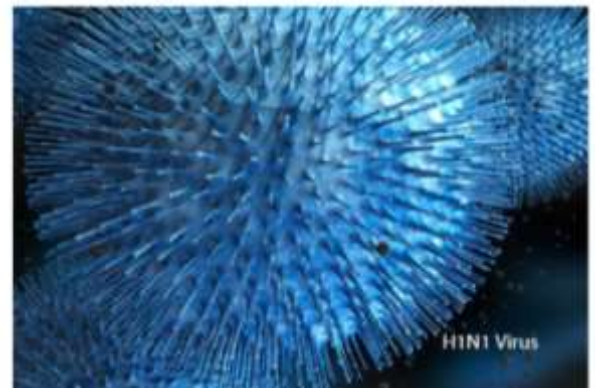


What's a Virus? Viral Infection Types, Symptoms, Treatment

What Is a Virus?

Viruses are small particles of genetic material (either DNA or RNA) that are surrounded by a protein coat. Some viruses also have a fatty "envelope" covering. They are incapable of reproducing on their own. Viruses depend on the organisms they infect (hosts) for their very survival. Viruses get a bad rap, but they also perform many important functions for humans, plants, animals, and the environment. For example, some viruses protect the host against other infections. Viruses also participate in the process of evolution by transferring genes among different species. In biomedical research, scientists use viruses to insert new genes into cells.

When most people hear the word "virus," they think of disease-causing (pathogenic) viruses such as the common cold, influenza, chickenpox, human immunodeficiency virus (HIV), SARS-CoV-2 and others. Viruses can affect many areas in the body, including the reproductive, respiratory, and gastrointestinal systems. They can also affect the liver, brain, and skin. Research reveals that viruses are implicated in many cancers as well.



What Is a Viral Infection?

A viral infection is a proliferation of a harmful virus inside your body. Viruses cannot reproduce without the assistance of a host. Viruses infect a host by introducing their genetic material into the cells and hijacking the cell's internal machinery to make more virus particles. With an active viral infection, a virus makes copies of itself and bursts the host cell (killing it) to set the newly-formed virus particles free. In other cases, virus particles "bud" off the host cell over a period of time before killing the host cell. Either way, new virus particles are then free to infect other cells.

Symptoms of the viral illness occur as a result of cell damage, tissue destruction, and the associated immune response.

Certain viruses -- like the ones that cause chickenpox and cold sores -- may be inactive or "latent" after the initial infection. For example, you may have a cold sore that erupts and then heals. The cold sore virus remains in your cells in a dormant state. Later, a trigger like stress, sunlight, or something else, may reactivate the virus and lead to new symptoms. The virus makes more copies of itself, releases new virus particles, and kills more host cells.

Are Viruses Alive?

Microbiologists still disagree. Those who say viruses are alive offer these reasons:

- They make copies of themselves to regenerate.
- They acquire energy (from their hosts).

Reasons some say viruses are not alive:

- They have no cells (only protein coatings surrounding genetic material).
- They don't reproduce by themselves; they need host cells.

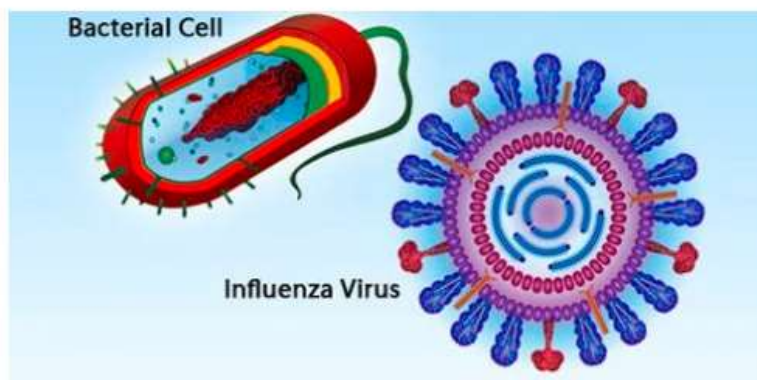
And one thing still undecided—do viruses respond to their environment?

It's hard to say. Some argue that they do not, while others say they do. It

may depend on a person's own definition of "life."

How Long Are Viral Infections Contagious?

Contagiousness refers to the ability of a virus to be transmitted from one person (or host) to another. Viral infections are contagious for varying periods of time depending on the virus. An incubation period refers to the time between exposure to a virus (or other pathogen) and the emergence of symptoms. The contagious period of a virus is not necessarily the same as the incubation period.



Is it a Bacterial or Viral Infection?

Viruses and bacteria are two types of potentially disease-causing (pathogenic) particles. Viruses are much smaller than bacteria and can't reproduce without the assistance of a host. Bacteria are capable of reproducing on their own. The symptoms of viral and bacterial illnesses are sometimes similar. A doctor can determine the underlying cause of an illness based on the patient's symptoms and other factors. Lab tests may help clarify whether an illness is due to a virus, bacteria, or other infectious agent or disease process.

Note that the drawing of influenza virus is enlarged; most viruses are much smaller than bacteria.



Virus Transmission

Viruses can be transmitted in a variety of ways. Some viruses can spread through touch, saliva, or even the air. Other viruses can be transmitted through sexual contact or by sharing contaminated needles. Insects including ticks and mosquitoes can act as "vectors," transmitting a virus from one host to another. Contaminated food and water are other potential sources of viral infection.