

Your Health

by Dr. Paul Roumeliotis

What Are Viral Infections?

Viruses, like bacteria, are commonly referred to as germs. However there are different types of germs.

Bacteria are small organisms made up of one cell, which cause various infections such as strep throat, pneumonia, meningitis and ear infections. Unlike bacteria, viruses are microorganisms that cannot live on their own. As parasites, viruses live and grow at the expense of the cells that they attack. They actually invade our body's cells and use them to grow and multiply. In the process, they destroy the host cells resulting in cell and tissue damage. Because they are so tiny, hundreds or even thousands of viruses can come out of one host cell. Even bacterial cells (which themselves can only be seen by a microscope) can get infected and invaded by viruses.

Viruses can cause throat infections, the flu, pneumonia and even ear infections among the many others. Unlike bacteria, antibiotics do not kill or affect viruses. One of the challenges in diagnosing someone with an infection is to try to determine whether the cause is a virus or bacteria. In this situation, certain specific tests may be performed in order to help the doctor pinpoint the exact cause. For example, we know that over 90% of all throat infections are due to viruses so we do a special throat swab test to see if it's strep throat (bacterial). If so, antibiotics are prescribed. If (like in the majority of cases) no bacteria are found, there is no specific treatment.

Most common viral infections like colds or stomach flu (gastro) do not cause any serious problems or complications and usually go away on their own. However, there are a fair number of viruses that can cause severe infections. Unfortunately, in most such cases there really are no effective anti-viral medications to stop them. A very tragic example is Human Immunodeficiency Virus (HIV) that causes Acquired Immune Deficiency Syndrome or AIDS. The HIV virus attacks our T-cells (protector cells), and renders the patient defenseless against infections that would otherwise cause no problems. Although some antiviral medications have been developed for HIV and other viral infections, there is no effective cure yet.

Other viral infections that we see today include Hepatitis A, B and C, mono, and some newer infections including West Nile Virus, SARS and even mad cow disease. Measles, mumps, German measles, polio and smallpox are other viruses that in the past caused a lot of disease and even death. Today, thanks to vaccination (our only protection, given the lack of effective anti-viral medications), these infections are now largely preventable.

On a final note, the study of viruses has really allowed scientists to better understand the molecular structure of cells, which has helped in the development of advances such as DNA fingerprinting and molecular/gene cloning.

Dr. Paul Roumeliotis is the Medical Officer of Health for the Eastern Ontario Health Unit and Assistant Professor of Pediatrics, McGill University. © Dr. Paul Roumeliotis