Image not found or type unknown

© 2020 All rights reserved.

Unit 23 — Epidemics, Viruses, and Pandemics

Reading: Viruses, Epidemics, and Pandemics

Viruses are strange microscopic organisms that behave unlike most other organisms we know. First, they are much smaller than even bacteria and they are not self-sufficient. Viruses need another living thing, called a host, in order to live and multiply. A virus manipulates its host's cells into creating more viruses. Thus they are thought to be mostly parasitic in nature.

When certain viruses enter the body, they inject RNA genetic material into the host's cells. The cell then stops its normal functions and instead produces more viruses before finally dying. The death of many thousands of cells causes the body to get sick. When outside of a human or other host's body, viruses are fragile and typically do not live for more than a few hours.

So, is a worldwide deadly viral epidemic really possible? Yes, it is possible for a virus to cause the type of mass deaths portrayed in movies such as Outbreak. Although, the progression of such a deadly virus is not quite as quick as these two hour action-packed movies show. In fact, such a contagion has wiped out millions of humans in a short time in recent history. For instance the 1918 outbreak called the Spanish Flu.

Stanford University reports that in the 1918 to 1919 flu season, 20 to 40 million people died from the Spanish flu virus. It's believed by scientists that this flu virus had mutated into a new strain not before seen by the human body. The human body's immune system was therefore defenceless against this new flu virus. The need grew for vaccines to protect mankind in the future.

It was that 1918 influenza outbreak that eventually led to the development of vaccines for many types of viruses. A vaccine contains a miniscule amount of the virus, which gets injected into the body. The immune system sees the virus and kills it. Because the amount injected is so small, the immune system can easily overtake it. Once the immune system kills a virus, it learns to recognize that type of virus. So, if the exact same virus enters the body again, the immune system acts more quickly and forcefully to kill the virus and the host never gets sick.

Depending on how the vaccine is made, the injected virus may be a dead inactive virus or a live virus. In the cases of the inactive virus vaccines, it's not possible to get the disease from the vaccine since the virus is not alive. For live virus vaccines, because the virus is made weak and such a small amount gets injected, getting the disease from the vaccine is unlikely.

When a new H1N1 flu virus strain was discovered in 2009, the medical community used what they learned from the 1918 flu outbreak. In 1918, doctors had yet to discover viruses and didn't make recommendations to protect humans from the spread until it was too late. The fear that the new strain of H1N1 could

spread quickly and kill millions is what lead to the World Health Organization (WHO) to declare a pandemic, the quick development of a new vaccine, and even school closures to stop the spread.

Learning from history may have saved millions of lives. The Centers for Disease Control (CDC) reports that as of February 2010, only 16,000 people worldwide had succumbed to this new H1N1, far fewer than the 1918 epidemic. Humans may have dodged a bullet with the 2009 H1N1 pandemic, but viruses mutate fast and another viral epidemic can develop at any time and without warning.

Discussion Questions

Has there been any serious viral outbreaks since the 2009 H1N1 pandemic? What was it? How did the medical community, press, and public at large respond?

If you were a virus, what effect would you have on children, middle-aged people, and the elderly? Would you be a good virus or a bad virus? Is there even such a thing as a good virus? Explain.