

The Immune System and Viral Specificity

A _____ is anything that causes a disease. The _____ is our bodies' way of defending itself against pathogens.

The Immune system can be divided into 2 parts:

1. **Non-specific response (aka the INNATE Immune System):**
2. **Specific response (aka the ACQUIRED Immune System):**

There are 3 lines of defense:

- 1.
- 2.
- 3.

Innate Virus-Specific Immune Responses

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Acquired Specific Immune Responses

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Viral Specificity

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Host Range:

- **Narrow host range:**
- **Broad host range:**

Viral Specific Diseases:

AIDS: HIV can be transmitted sexually, through contact with contaminated blood, tissue or needles and from mother to child during birth or breastfeeding. Full-blown symptoms of AIDS may not develop for more than 10 years after infection.

Chicken Pox: Infects most children worldwide by the age of 10. It is transmitted in airborne droplets exhaled from an infected person. the virus causes a low fever and blisters that begin as red spots covering most of the body and inside the mouth. The disease is dangerous to newborns, to people first infected in adulthood, and to those in whom the virus remains dormant in nerve cells, erupting as the more painful and sometimes chronic disease, shingles, later in life.

Hepatitis B: The hepatitis B virus (HBV) causes inflammation of the liver. Symptoms of hepatitis B infection include jaundice and a flu-like illness. Chronic infection can lead to serious problems such as cirrhosis and cancer of the liver.

Rabies: The rabies virus is usually transmitted to humans by a bite from an infected animal (dog, bat, racoon, etc.). In North America, skunks are the principal carriers of the disease. Symptoms of the disease appear after an incubation period of 10 days to one year and include fever, breathing difficulties, muscle spasms, and in later stages, an irrational fear of water. Death almost invariably occurs within 3 days to 3 weeks of the onset of symptoms.

Human Papillomavirus (HPV): Can cause benign skin tumours and has been linked to the development of cervical cancer.

Herpes: Herpes is Greek for “to creep”, and is applied to several types of viruses that cause skin eruptions characterized by the formation of blisters. Some herpes viruses cause mononucleosis and can lead to birth defects when pregnant women are infected. Together, this group of viruses are estimated to cause more human illnesses than any other group of viruses.