

## **What is Infection?**

Infection: The invasion and multiplication of microorganisms such as bacteria, viruses, and parasites that are not normally present within the body. An infection may cause no symptoms and be subclinical, or it may cause symptoms and be clinically apparent. An infection may remain localized, or it may spread through the blood or lymphatic vessels to become systemic (bodywide). Microorganisms that live naturally in the body are not considered infections. For example, bacteria that normally live within the mouth and intestine are not infections.

## **Semptoms of Infections**

The level of C-reactive protein (CRP), which can be measured in your blood, increases when there's inflammation in your body. Your doctor might check your C-reactive protein level for infections or for other medical conditions.

**Cepsis:** Sepsis is a life-threatening illness caused by your body's response to an infection. Your [immune system](#) protects you from many illnesses and infections, but it's also possible for it to go into overdrive in response to an infection. Sepsis develops when the chemicals the immune system releases into the bloodstream to fight an infection cause inflammation throughout the entire body instead. Severe cases of sepsis can lead to [septic shock](#), which is a medical emergency. Sepsis is [defined as](#) "life-threatening organ dysfunction caused by a dysregulated host response to infection." In lay terms, sepsis is a life-threatening condition that arises when the body's response to an infection injures its own tissues and organs.

## **Infectious diseases**

Infectious diseases are disorders caused by organisms — such as bacteria, viruses, fungi or parasites. Many organisms live in and on our bodies. They're normally harmless or even helpful, but under certain conditions, some organisms may cause disease. Some infectious diseases can be passed from person to person. Some are transmitted by bites from insects or animals. And others are acquired by ingesting contaminated food or water or being exposed to organisms in the environment. Signs and symptoms vary depending on the organism causing the infection, but often include fever and fatigue. Mild infections may respond to rest and home remedies, while some life-threatening infections may require hospitalization. Many

infectious diseases, such as measles and chickenpox, can be prevented by vaccines. Frequent and thorough hand-washing also helps protect you from most infectious diseases

### *Use of Antibiotics*

**Antibiotics** also called antibacterials, are a type of antimicrobial drug used in the treatment and prevention of bacterial infections. They may either kill or inhibit the growth of bacteria. A limited number of **antibiotics** also possess antiprotozoal activity. **Antibiotics** are not effective against viruses. Depending on the range of bacterial species susceptible to these agents, antibacterials are classified as broad-spectrum, intermediate-spectrum, or narrow- spectrum.

1. **Broad spectrum antibacterials** are active against both Gram-positive and Gram-negative organisms. Examples include: tetracyclines, phenicols, fluoroquinolones, “third-generation” and “fourth-generation” cephalosporins.
2. **Narrow spectrum antibacterials** have limited activity and are primarily only useful against particular species of microorganisms. For example, glycopeptides and bacitracin are only effective against Gram-positive bacteria, whereas polymyxins are usually only effective against Gram negative bacteria. Aminoglycosides and sulfonamides are only effective against aerobic organisms, while nitroimidazoles are generally only effective for anaerobes.

### – **Virus**

Viruses are tiny organisms that may lead to mild to severe illnesses in humans, animals and plants. This may include flu or a cold to something more life threatening like HIV/AIDS. The virus particles are 100 times smaller than a single bacteria cell. The bacterial cell alone is more than 10 times smaller than a human cell and a human cell is 10 times smaller than the diameter of a single human hair. Viruses by themselves are not alive. They cannot grow or multiply on their own and need to enter a human or animal cell and take over the cell to help them multiply. These viruses may also infect bacterial cells. The virus particle or the virions attack the cell and take over its machinery to carry out their own life processes of multiplication and growth. An infected cell will produce viral particles instead of its usual products.

### – **Bacteria**

Bacteria are microscopic single-celled organisms that thrive in diverse environments. They can live within soil, in the ocean and inside the human gut. Humans' relationship with bacteria is complex. Sometimes they lend a helping hand, by curdling milk into yogurt, or helping with our digestion. At other times they are destructive, causing diseases like pneumonia and MRSA.