TRANSMISSION

Each virus and bacterium has its own mode of transmission depending on its life cycle, which involves the type of target cell or the site of infection. However, **some can be spread in similar ways:** through droplets expelled by coughing or sneezing; by being in contact with an infected person or surface; by touching the nose, mouth or eyes without washing hands; through contact with infected body fluids; animals or insects (fleas, ticks, or mosquitoes); or even from mother to child during birth. They can also be found in water and food.

TREATMENT

ANTIVIRALS

Slow down viral replication.

ANTIBIOTICS

Kill the bacteria or stop them from multiplying.

Vaccines can help prevent infections by both microorganisms.

DIAGNOSIS

Depending on the symptoms, it can be difficult to identify whether the cause of an illness is bacterial or viral. This is why it is important to seek the advice of a healthcare professional:

- To open a medical record
- To carry out a physical examination
- To perform rapid diagnostic tests, if necessary
- To test blood, urine or tissue samples (when appropriate)

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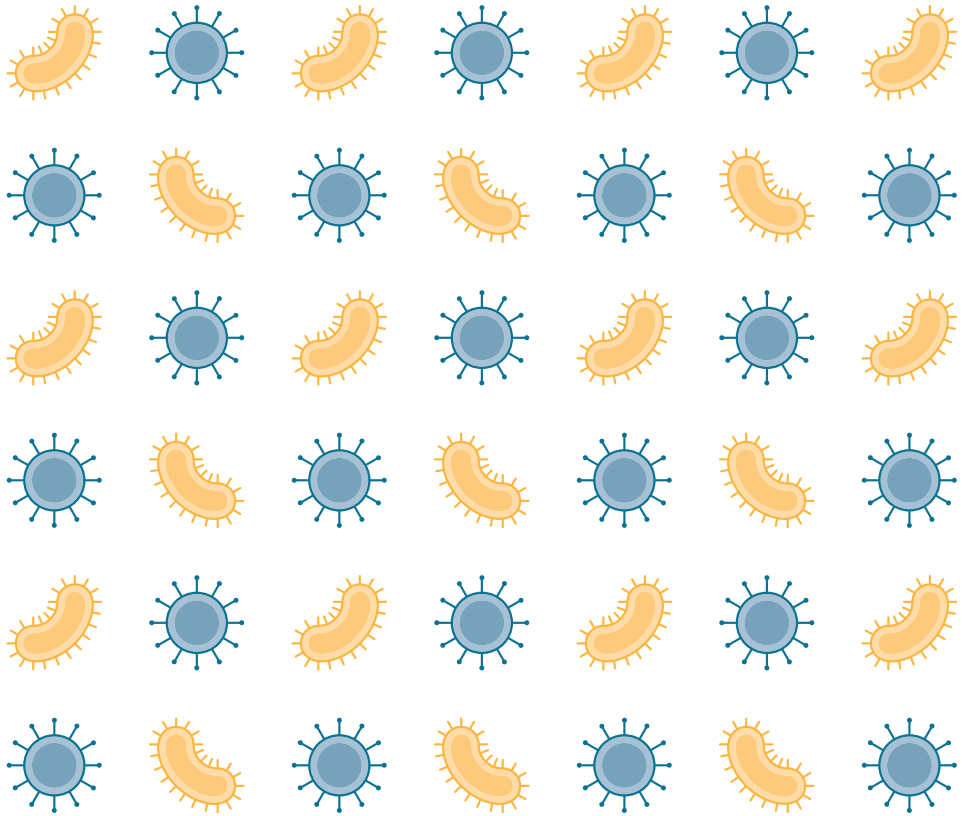
VIRUSES & BACTERIA



WHAT IS THE DIFFERENCE?

HOW DO VIRUSES AND BACTERIA DIFFER?

Viruses and bacteria are microorganisms that can be transmitted by contact with infected people, through contaminated surfaces, food or water, or by contact with animals and insects.

The symptoms caused by viral and bacterial infections are common: coughing, sneezing, fever, inflammation, vomiting, diarrhoea, tiredness, chills, etc. However, the way viral and bacterial infections are treated is different.

WHAT ARE THEY LIKE? *SIZE AND SHAPE*

VIRUSES

Their survival and reproduction depends on a host organism, therefore, at the present moment there is no consensus in the scientific community on considering them as living or not living microorganisms. They are much smaller than bacteria.

They have a nucleus with genetic material that is surrounded by proteins.

They can be spherical (polyhedral), rod-shaped or helical. Some have more complex shapes, such as **bacteriophages**. They can also take the form of viroids and prions.

BACTERIA

They are complex, single-celled, living microorganisms, many of which have a rigid wall and a membrane that surrounds and confines the cell.

They usually live between cells and have their own cellular machinery, organelles and genetic material within the cell wall.

They can be spherical (cocci), rod-shaped (bacilli), spiral or comma-shaped (vibrio). Some have the ability to produce **spores** to remain dormant and survive extreme environmental conditions.

WHAT DISEASES DO THEY CAUSE? *DISEASE, INFECTION AND TRANSMISSION*

VIRUSES

They are useful in genetic engineering, but mostly cause disease by attacking specific cells in our bodies.

Viruses **can cause colds, laryngitis, AIDS, influenza, bronchiolitis, chickenpox, measles, rubella, mumps, mononucleosis, herpes, hepatitis, most gastroenteritis and some forms of angina.** They can also infect animals, plants, protozoa, fungi and bacteria.

Examples: HIV, Hepatitis A, Rhinovirus, Ebola, coronavirus.

They usually cause a systemic infection with (or without) fever lasting 2-10 days.

BACTERIA

Most are harmless to us and, as microbiota, help us digest food, fight other microorganisms or cancer cells, and provide essential nutrients.

Those that are pathogenic (less than 1%) **can cause diseases such as whooping cough, scarlet fever, tuberculosis, ulcers, urinary tract infections, otitis, some types of angina and gastroenteritis.** They can also infect other animals, plants and fungi.

Examples include: *E. coli, Salmonella* spp., *Listeria* spp., *Mycobacteria* spp., *Staphylococcus* spp., *Bacillus anthracis*.

They usually cause fever and local infections for more than 10 days.

Angina, meningitis, diarrhoea, pneumonia, and conjunctivitis can be **caused by both viruses and bacteria**. In addition, **there are also some viral infections that can set off complications after a few days and become infected by bacteria**, such as otitis, sinusitis, pneumonia or herpes infection of the skin.

HOW DO THEY REPLICATE? *REPRODUCTION AND ENVIRONMENT*

VIRUSES

They cannot survive without a host. They invade the cell and cause it to make copies of their genetic material and produce their proteins to make new viral particles (virions). They then destroy the host cell and are released into the environment. Once released, they go on to infect other cells.

BACTERIA

They can reproduce themselves. However, they must first replicate their genetic material, around which they form a new membrane and cell wall forming two separate cells.

They can survive in extreme environments (extreme heat or cold, humidity, radioactivity, acidic or basic environments) and in the human body.