

Communicable Disease

How they cause disease,
how they spread and how
your body protects you.

[Begin](#)

The Different types of pathogen

Bacteria

Viruses

How they spread

Protists

Fungi

Next section

Bacteria are cells like what your body is made of just much smaller- about 100 times smaller than human cells. The conditions inside bodies are ideal conditions for many of them to reproduce rapidly.

They can make you feel ill by releasing toxins into your body as they reproduce throughout. These toxins make you feel ill by damaging your cells and tissues.

Bacteria



Viruses are not cells; they are much too small (around 100 times smaller than most bacteriums) and cannot reproduce by themselves so instead they hijack your cells reproductive mechanisms to create so many of them that your cell bursts and they then keep spreading killing more and more cells. This is what make you feel ill from viruses.

Viruses



Protists take many forms but there is one thing that they all have in common; they are all eukaryotes and the majority are single-celled.

Some are parasites. Parasites live on or inside other organisms and can cause them damage. They are often transferred by a vector.

Protists



Some fungi are single-celled. Others have a body made up of hyphae (thread-like structures) which can grow and penetrate human skin. This causes the disease. The hyphae also produce spores.

Fungi



Some pathogens can spread in water; which is why drinking/ bathing in dirty water is a bad idea. E.g. cholera is a bacteria that can be spread by drinking contaminated water.

Some pathogens can spread by air and then get breathed in. E.g. The influenza virus (causes the flu) is spread by the production of droplets released when you sneeze or cough.

Some pathogens can spread by direct contact- touching contaminated surfaces. E.g. athlete's foot is a fungus that is most commonly spread by touching the same things as someone who is infected. E.g. shower floors and towels.

How they spread



Return

Diseases caused by each type of pathogen

Diseases caused by
bacteria

Diseases caused by
viruses

Diseases caused by
protists

Diseases caused by
fungi

Only some examples of
each type are here; these
are not the full range of
diseases.

Back

Next section

Salmonella is a bacteria that causes food poisoning. Infected people can suffer from fevers, stomach cramps, vomiting and diarrhoea. These symptoms are caused by the toxins released by salmonella. You can get it by eating contaminated food- chicken that was infected while alive or food that was prepared unhygienically.

Gonorrhoea is an STD. this means that you can catch it from having unprotected sex with a person who has it. A person with it will get pain when they urinate and may also get thick yellow or green discharges from the vagina or penis.

Diseases caused by bacteria



Return

Measles is a viral disease. It is spread by droplets from an infected person's sneeze or cough. It causes a red skin rash and a fever in infected people. It becomes far more serious if there is a complication like the onset of pneumonia or encephalitis- lung and brain infections respectively.

HIV is a virus that is spread through the exchange of bodily fluids such as blood or through sexual contact. The first of these can happen when sharing needle for example. Initially it causes flu-like symptoms for a few weeks. After that the infected can go for several years without symptoms. Then the virus attacks the immune system. A damaged immune system like this means that the body cannot fight off other infections or cancers.

Tobacco Mosaic Virus is a virus that affects many species of plants E.g. tomatoes.

It causes a mosaic pattern on the leaves- discolouring them so that the plant cannot carry out photosynthesis properly, affecting the plants growth.

Diseases caused by viruses



Return

Rose Black Spot is a fungus that causes purple or black spots to develop on the leaves of rose plants. The leaves can then turn yellow and drop off.

This means that less photosynthesis can happen so the plant struggles to grow.

It spreads by both air and water so gardeners need to treat the disease by using fungicides or stripping affected leaves from the plants. Those leaves then need to be destroyed to prevent it returning.

Diseases caused by fungi



Return

Malaria is a disease caused by a protist. Part of the protist's lifecycle takes place inside mosquitos- these are vectors- they pick up the protist when they feed on an infected animal then everytime they feed on an uninfected animal the protist is inserted into the blood stream of that animal.

Malaria causes repeated episodes of fever, it can be fatal.

The spread of malaria can be reduced by stopping mosquitos from breeding and by using insecticides and mosquito nets to protect yourself.

Diseases caused by protists



Return

The Bodies Defenses

Pre-infection Defences

White Blood Cells

Back

Next Section

The skin acts as a natural wall against pathogens, producing antimicrobials to kill pathogens.

Hair and mucus in your nose trap particles that could contain pathogens.

The trachea and bronchi secrete mucus to trap pathogens. They are also lined with cilia- hair-like structures- which waft the mucus to the back of the throat where it can be swallowed.

The stomach produces hydrochloric acid in case the pathogen gets that far

Pre-infection Defenses



Return

If the pathogen gets into the blood stream then the main part of the immune system kicks in- the white blood cells. They have a few ways of destroying pathogens.

- 1) They can consume them; white blood cells can engulf the pathogens and digest them. This is called phagocytosis.
- 2) They can produce antibodies. If it is a pathogen that has been there before, then they will immediately start producing the right antibody and destroy the infection. However if it is a new one then it takes longer to release the right antibody. Once the right one has been found, it is spread throughout the body to kill remaining pathogens.

Finally, the white blood cells also produce antitoxins to counteract any toxins that a bacterial infection could release.

White Blood Cells



Return

Vaccines

Usage

Pros and
Cons

Back

Next Section

Vaccines mean that we can prevent problems from happening instead of fighting them once they have.

They involve injecting small amounts of weakened pathogens into the blood stream. Then the body learns how to fight off that pathogen on the weak one so if a real infection from that pathogen occurs, your body can fight it off without you getting ill.

Uses of Vaccines



Return

Pros:

- They have helped reduce control communicable diseases massively; smallpox is gone completely and polio has fallen by 99%
- Epidemics can be prevented if the majority of the population is vaccinated because then even the unvaccinated people are less likely to get it because the spread is restricted.

Cons:

- They have a small chance to not work
- They can occasionally trigger a negative reactions(e.g. swelling or something more serious) but these are incredibly rare.

Pros and Cons of Vaccines



Return

COVID-19

It is spread from person to person through the air-droplets from coughing and sneezing- and through direct contact- touching things that infected people recently touched.

The main symptoms of COVID-19 are a high temperature and a new, continuous cough.

It could be anything up to several years before a vaccine for COVID-19 is created. Experts say that one before the end of this year is unlikely but possible

Schools have been closed, people are told to only leave their house if it is necessary, to work from home if they can and not to go to a hospital if you are showing the minor end of its symptoms

The different stages of testing that need to be done are:

- Exploratory stage
- Pre-clinical stage
- Clinical development
- Regulatory review and approval
- Manufacturing
- Quality control

Herd immunity is where such a majority of the population is immune and as such cannot spread it so that the virus cannot spread as the chance of an infected person coming in contact of a non-immune person are too slim