

CACHE Level 2

Certificate in Understanding Common Childhood Illnesses

SPREAD OF INFECTION

POLICIES AND PROCEDURES

HEALTHY ENVIRONMENTS

SIGNS AND SYMPTOMS

ALLERGIES

ACUTE AND CHRONIC HEALTH CONDITIONS

Workbook 1

Section 1: Understand how infection is spread

To provide a safe and healthy environment for babies and young children, the risk of infection must be as low as possible. In this section you will learn about the different types of infection, how they are spread and how bacteria grow.

Different types of infection

Please read the following as it will help you to answer question 1.

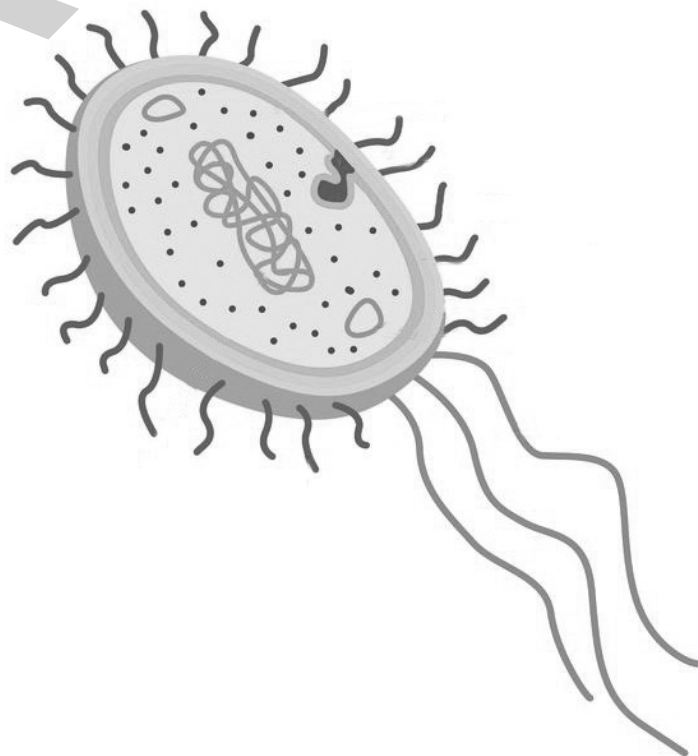
When an illness-causing micro-organism – a germ – gets past the body's natural defences, attaches to cells and multiplies, it is known as an infection. Organisms that cause illnesses can come from a range of sources, including the air, contact with bodily fluids, water and insect bites.

The body's natural defences include the skin, which acts as a physical barrier to germs, and antibodies, which are produced by the immune system to attack specific organisms, known as microbes.

Bacterial infections

Bacteria are single-celled organisms (living things), which can be found on and in people, plants and animals. They are microscopic, which means they can only be seen under a microscope, and they can reproduce on their own. Not all bacteria are bad; in fact, only one per cent of bacteria can lead to illness. 'Good' bacteria help keep the human immune system strong and are responsible for maintaining digestion and producing vitamins.

The image to the right shows what a bacterium looks like under a microscope.



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'Bad' bacteria can cause infections, such as *Streptococcus pneumoniae* which cause pneumonia. A bacterial infection happens when a harmful strain of bacteria multiplies rapidly on or inside the body. Illness from bacteria can happen in two ways: due to the sheer volume of bacteria, which overwhelms the immune system, or because of the body's response to the presence of the bacteria.

Bacterial infections can be spread by coughing, sneezing, contact with an infected person's bodily fluids, contact with contaminated water, food or surfaces and contact with infected animals, including ticks.

Examples of bacterial infections include:

- E. coli
- meningitis
- eye infections
- pneumonia
- ear infections
- food poisoning
- whooping cough
- impetigo
- salmonella
- chlamydia

Treatment

Bacterial infections can usually be treated by helping the body's defence mechanisms, for example with antibiotics.

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Fungal infections

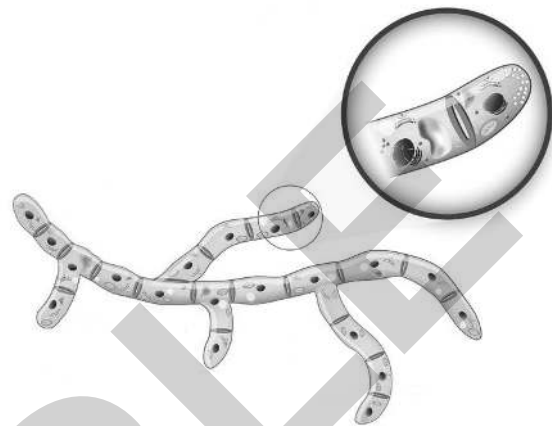
Fungi, like bacteria, can live in the air, soil, water and plants, animals and the human body. They are single-celled, living organisms that consist of yeasts, moulds, mildews, rusts and mushrooms and are responsible for breaking down organic matter. They can also be used to make high-protein foods.

The image to the right shows what a fungus looks like under a microscope.

A fungal infection happens when fungus cannot be defeated by the immune system and takes over an area of the body, which it does by invading the skin and growing in dead keratin, which is the protein that makes up skin, hair and nails. A fungal infection can happen through an open wound or by inhaling spores. Individuals with

a weakened immune system, for example someone undergoing treatment for cancer or someone taking antibiotics, may be at increased risk of getting a fungal infection.

A fungal infection usually isn't too serious, but can be contagious and difficult to get rid of because fungi can survive different environments and are able to keep re-infecting the individual. For example, athlete's foot is a fungal infection that leads to itchy, blistered feet and peeling skin. This type of fungus grows best in warm, moist environments, such as socks and shoes, which makes getting rid of it very difficult – especially in the warmer months or if the individual exercises regularly.



Examples of fungal infections include:

- athlete's foot
- thrush
- ringworm

Treatment

Treatments for fungal infections vary, and may include ointments, creams, suppositories, oral medications and proper hygiene.

Did you know?

Fungi are used to make bread (yeast), beer (hops) and wine (yeast).

The antibiotic penicillin was derived from a fungus.

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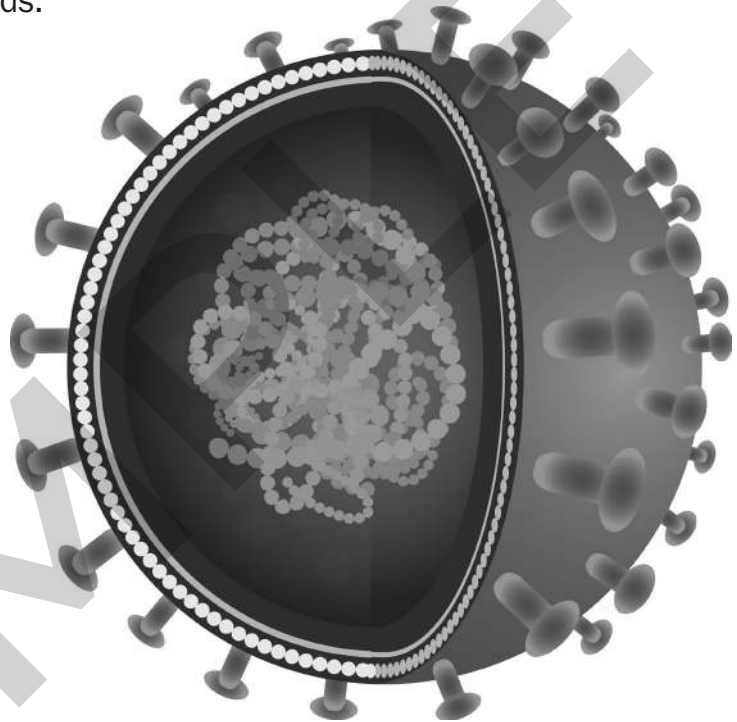
Viral infections

Viruses are germs that cause infectious and serious diseases by attacking specific cells in the human body. They are smaller than bacteria and cannot reproduce on their own. Instead, a virus needs a 'host', which means that it attaches to a cell to reproduce. Once it is attached to the cell, it changes the cell to force it to make new viruses. Eventually, the cell will be killed, damaged or changed, and this is what makes an individual ill. Viruses can be very contagious, which means they can be passed from person to person by coughing, sneezing or coming into physical contact with an infected individual's bodily fluids.

The image to the right shows what a virus looks like under a microscope.

Examples of viral infections include:

- meningitis
- chicken pox
- rabies
- the common cold
- flu
- glandular fever
- measles
- mumps
- Rubella
- AIDS



Treatment

Viral infections cannot be treated with antibiotics and patients usually have to wait for their immune systems to fight the virus off. In some cases, antiviral medicines can be taken to help treat a viral infection.



Did you know?

Bacteria are used to make cheese and yoghurt.

Section 1: Understand how infection is spread

The ideal conditions for bacterial growth

Please read the following as it will help you to answer question 2.

Bacteria are able to adapt and can grow in a range of conditions. However, some conditions make it much easier for bacteria to grow. One way to reduce the risk posed by bacterial infections is to understand these conditions.

The ideal conditions for bacterial growth are:

1. **Water:** without water, bacteria cannot grow and will die. Areas that are moist, such as bathrooms, are particularly prone to bacterial growth. On the body, moist areas such as the nose and mouth are highly susceptible to bacterial growth.
2. **Temperature:** bacteria love warm temperatures and thrive in temperatures similar to that of the human body, which is why it is so common for people to get bacterial infections. To avoid food poisoning associated with bacteria growing on food, it is important that food is kept refrigerated or frozen and is cooked thoroughly to kill harmful bacteria.
3. **Oxygen:** most bacteria thrive in oxygen-rich environments, which is why some foods are packaged in vacuum-sealed containers. Once the packaging has been opened and the air can get to the food, the opportunity for bacteria to grow increases.
4. **Energy:** bacteria need energy from food, such as protein, starch and sugars, to grow. This means that foods high in these types of energy will be more susceptible to bacterial growth, e.g. mould.
5. **pH:** pH is a measure of acidity or alkalinity, and most bacteria prefer to grow in a neutral pH (the human body has a neutral pH). This means that foods that have a high acidity or alkalinity, such as lemons, can be stored for longer periods than those that have a more neutral pH.

Section 1: Understand how infection is spread

Direct and indirect transmission of infection

Please read the following as it will help you to answer question 3.

As well as understanding the conditions in which bacteria grow, it is important to understand how infections are spread. For an infection to spread it must be transmitted, or passed, from person to person. There are two different ways infections can be transmitted: direct, e.g. when bodies or parts of bodies touch, such as when you shake hands or share a towel with someone, and indirect, e.g. through an intermediary source, such as through the air in droplets, water, food or sharp objects.

Direct transmission of infection

Direct contact infection transmission can be vertical or horizontal. Look at the information in the following table to learn more about how the different types of transmission work.

Type of transmission	How infection is transmitted
Vertical	Infection is transmitted from mother to child during pregnancy, birth and breastfeeding.
Horizontal	This is usually through person-to-person contact, such as kissing, touching and sexual intercourse. Infections that can be transmitted include: cold sores, bacterial meningitis, chicken pox and HIV.
Droplet	Infection is transmitted when droplets of pathogen-containing mucus are expelled from the body in a sneeze or cough or even when talking. This is considered to be contact transmission over short distances. Infections that can be transmitted this way include: colds, flu, pneumonia and tuberculosis (TB).

Indirect transmission of infection

When an infection is transmitted indirectly it can be by coming into contact with infected objects, such as a doorknob, or by sharing a towel that has been used by an infected person. Additionally, an individual can become infected by coming into contact with a sharp object such as a used needle.

ACCIDENTS

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