

THE IMMUNE SYSTEM

How do we get sick?

Four ways to transmit infectious diseases:

1. **DIRECT CONTACT** ex: coming in contact with an infected person through touch or bodily fluids. For example: someone sneezes on you and a few days later you catch a cold.
2. **INDIRECT CONTACT** ex: being near an infected person. For example: someone coughs and does not cover their mouths- virus can move around a room.
3. **WATER AND FOOD** ex: infected food, unclean water. For example getting food poisoning
4. **ANIMAL BITES** ex: animals transfer the pathogen to you. For example: **Malaria** is transferred to people when they are bitten by an infected mosquito.

How your body protects you

A healthy immune system **ATTACK** and **DESTROY** invaders.

These invaders may be:

1. **PATHOGEN** an organism (living thing) or a substance that causes disease. For example: Salmonella bacteria causes food poisoning.
2. **ANTIGEN** any substance that the body does not recognize; usually a non-living particle. For example:

We have **TWO LINES OF DEFENCE** against invaders:

FIRST LINE OF DEFENCE:

The skin and the linings of all internal body systems.

1. **THE SKIN** is a physical barrier
2. **SWEAT AND OIL** are slightly acidic to prevent pathogens from growing
3. **GASTRIC JUICE** can kill bacteria
4. **MUCUS AND CILIA** in the respiratory system catch foreign particles

SECOND LINE OF DEFENCE:

If the invader gets passed the first line of defence the body can mount other defences.

I. THE INNATE RESPONSE:

- **QUICK** and **GENERAL (non-specific)**
- Body makes more **WHITE BLOOD CELLS** that are called **PHAGOCYTES** to fight the infection
- Causes **FEVER** and **INFLAMMATION**(swelling and redness)

II. ACQUIRED IMMUNE RESPONSE:

- **SLOW** and **SPECIFIC**
- Two different types of acquired immune responses: both ways involve **WHITE BLOOD CELLS** called **T** cells and **B** cells
- **B CELLS** – recognize antigens and then produce **ANTIBODIES** to fight them
- Antibodies bind to antigens to make them harmless
- **T CELLS** - **KILLER T cells** work on their own to kill pathogens
- **HELPER T cells** activate B cells and Killer T cells

When antigens are destroyed, some of the antibodies stay in the body. The antibodies provide **ACTIVE IMMUNITY**.

They can protect the body from FUTURE INFECTIONS.

VACCINES “boost” your immune system after it has been some time since your last vaccination. In grade 9 you will receive these shots.