

# B3 – Infection and Response

## Communicable Diseases – diseases caused by a pathogen

Disease	Pathogen	Symptoms	Spread by	Prevent spread	Treatment
Salmonella	Bacteria	Fever, cramps, vomiting, diarrhoea	Contaminated food	Vaccinating poultry, cooking food thoroughly	Antibiotics or management of symptoms
Gonorrhoea	Bacteria	Yellow/green discharge, pain when urinating	Sexual Contact	Using barrier protection, e.g. condoms	Antibiotics
Measles	Virus	Red rash and fever	Breathing in droplets from coughs/sneezes	Vaccination	No cure – only management of symptoms
HIV	Virus	Flu-like symptoms, develops into AIDS	Sexual contact	Using barrier protection, e.g. condoms	Antiretroviral drugs
Tobacco Mosaic Virus (plants)	Virus	'Mosaic' pattern of discolouration on the leaves	Soil	Destroy infected plants	No treatment
Rose Black Spot (plants)	Fungus	Black spots on leaves	Wind or water	Remove and destroy infected leaves	Fungicides
Malaria	Protist	Recurrent episodes of fever	Insect bites (mosquitoes)	Mosquito nets, insect repellent	Antimalarial drugs

## Antibiotics & Painkillers

Antibiotics = kill bacteria (specific antibiotic for specific bacteria) **THEY DO NOT KILL VIRUSES** e.g. penicillin

Antibiotics cannot kill viruses because viruses live inside cells

Painkillers = stop pain (don't kill microbes, just help with symptoms) e.g. paracetamol

## Development of Drugs

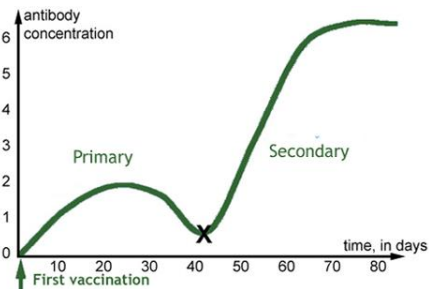
Testing for:

- Safety
- Efficacy (does it work)
- Dosage (how much is needed)

Stage	Description	
1	pre-clinical	Tested on cells and tissues. Side effects? Efficacy?
2		Tested on animals. Side effects?
3	clinical	Clinical trials = tested on humans. 1 <sup>st</sup> health volunteers, 2 <sup>nd</sup> patients with the illness. Dosage gradually increased to optimum.

## Vaccination

- Introducing small quantities of dead or inactive forms of pathogen into the body.
- Stimulates WBCs to produce antibodies.



- If same pathogen returns (X), WBCs remember how to make the right antibodies.
- They make MORE antibodies, MORE QUICKLY, and they stay in body for LONGER.

## Nose

Hairs and mucus trap pathogens before entering lungs.

## Stomach

Contains hydrochloric acid to kill pathogens that have been eaten.

**Trachea & Bronchi**  
Cilia cells (small hair-like projections from cells) and mucus (produced by goblet cells) trap pathogens.

**Skin**  
If damaged, repairs itself (scabs)

## Non-specific Defence Systems

## White Blood Cells (WBCs)

1. Phagocytosis – engulfing the pathogen
2. Producing antibodies – specific to the antigen
3. Producing antitoxins – to neutralise toxins

