



## 9A - How are infectious diseases spread?

Health and Disease	
<b>Health</b>	Being free from illness or injury.
<b>Disease</b>	A condition caused by any part of an organism not functioning properly.
<b>Communicable disease</b>	A disease which can be transmitted between organisms; also known as an <i>infectious</i> or <i>contagious</i> disease.
<b>Non-communicable disease</b>	A disease that is not transmissible directly from person to person. Can be caused by poor lifestyle choices (e.g. Type 2 diabetes), inheriting a genetic disorder (e.g. sickle cell anaemia), or body processes malfunctioning (e.g. cancer).
<b>Microorganism</b>	Organism which can only be seen using a microscope.
<b>Pathogen</b>	Disease-causing microorganism.
Spread of communicable diseases	
<b>Spread of pathogens in animals</b>	Through cuts in skin; by being ingested or breathed in; during sexual intercourse.

<b>Spread of pathogens in plants</b>	Via <i>vectors</i> (carriers) e.g. insects; direct contact with infected sap; infected fungal spores or seeds being spread by the wind.
<b>Droplet infection</b>	Method of disease transmission; pathogens are spread by airborne droplets from mouth/nose.
<b>Diagnosis</b>	Identifying a disease in a plant or animal.
<b>Incubation period</b>	The time between a pathogen entering your body and symptoms appearing. Pathogens reproduce in this time.
<b>Incidence of disease</b>	The number of new cases of a disease, per unit population, per unit time.

Type of pathogen	Animal disease example	Plant disease example
Bacteria	Tuberculosis	Crown gall disease
Fungi	Athlete's foot	Powdery mildew
Viruses	Influenza (flu)	Tobacco mosaic disease
Protozoa	Malaria	Coffee phloem necrosis

Preventing spread of communicable diseases	
<b>Preventing spread of communicable diseases</b>	Covering coughs/sneezes; not touching infected materials; using condoms to prevent STIs; not sharing needles; washing hands; cooking food correctly; drinking clean water; burning diseased plant material; using chemical dips on farms.
Human infections	
<b>Food poisoning</b>	Caused by bacteria and the toxins they produce. <i>Campylobacter</i> , <i>salmonella</i> and <i>E.coli</i> 0157 can all cause illness. Symptoms include vomiting, diarrhoea and fever. The bacteria are killed by thorough cooking
<b>Sexually transmitted infections (STIs)</b>	<i>Chlamydia</i> - caused by bacteria. <i>Gonorrhoea</i> - caused by bacteria. <i>Genital herpes</i> - caused by a virus. <i>HIV</i> - caused by a virus. Symptoms - weakened immune system; often develops into <i>AIDS</i> , when the body can no longer fight life-threatening infections.

Defence mechanisms against communicable disease	
<b>Primary defences of the body against disease (Nonspecific defences)</b>	<i>Skin</i> - physical barrier. <i>Cilia</i> and <i>mucus</i> in airways - traps Microorganisms. <i>Nasal hairs</i> – trap dust and larger microorganisms. <i>Acid in stomach</i> - kills pathogens. <i>Tears</i> - contain lysozymes, enzymes that destroy bacteria.
<b>How scabs form</b>	Platelets at the site of the cut work to form a blood clot which keeps skin clean, prevents microorganisms entering and allows time for cut to heal.
<b>Secondary defences against pathogens</b>	<i>Phagocytes</i> are white blood cells that engulf and digest microorganisms. <i>Lymphocytes</i> make antibodies or antitoxins.
<b>Antigen</b>	Proteins on the surface of a microorganism.
<b>Antibodies</b>	Proteins made by lymphocytes which destroy pathogens by attaching to their surface antigens.
Vaccinations	

<b>Vaccine</b>	Contain small amounts of weakened or dead pathogen, or instructions on how body cells can construct surface antigen of the pathogen
<b>Immunity</b>	When the body can rapidly make antibodies against a specific pathogen it has encountered before, destroying it before it makes you feel ill.
Destroying pathogens	
<b>Antiseptic</b>	Chemicals that kill or neutralise all types of pathogen, but do not damage human tissue.
<b>Antiviral</b>	Drugs that destroy viruses.
<b>Antibiotic</b>	Drugs that destroy bacteria.
<b>Aseptic technique</b>	Technique used to ensure that no foreign microorganisms are introduced into a sample being tested.
<b>Zone of inhibition</b>	Area on an agar plate that bacteria cannot grow.
Developing new medicines	
<b>Clinical trials</b>	Stages of testing required to approve a drug for use.
<b>Placebo</b>	A drug with no active ingredient.