AQA GCSE Topic 3 Infection & Response Key Words

Key Word	Definition
Pathogens	Microorganisms that cause disease. They cause communicable diseases
Bacteria	A type of pathogen. They are tiny cells that reproduce rapidly and produce toxins that damage other cells e.g. Salmonella, E.Coli
Viruses	A type of pathogen. They are not cells but can live inside cells. They make many copies of themselves inside cells, causing the cell to burst. They are smaller than bacteria e.g. HIV, TMV, measles
Protists	A type of pathogen. All protists are eukaryotes, most are single-celled. Some are parasites and are transferred to the organism by a vector e.g. malaria is caused by a protist carried by a vector (a mosquito)
Fungi	A type of pathogen. Some are single-celled, some have a body made up of thread-like structures called hyphae, which can cause disease e.g. black spot fungus
Measles	A viral disease. Spread through droplets from an infected person's sneeze or cough. Causes a red skin rash and a fever
HIV	A viral disease. Spread through sexual contact or other bodily fluids e.g. blood. Causes flu-like symptoms first but then attacks immune cells so the body can't cope with infections, this is called AIDS
Tobacco mosaic virus (TMV)	A viral plant disease. Causes a mosaic pattern on plant leaves, so the plant can't carry out photosynthesis and won't be able to grow
Rose black spot	A fungal plant disease. The fungus spreads in water or by the wind. Causes purple or black spots on the leaves of rose plants, so the plant can't carry out photosynthesis and won't be able to grow
Malaria	A protist disease. Mosquitoes are vectors (they carry the malaria protist) and insert the protist into blood vessels when they feed. Causes fever and can be fatal
Salmonella food poisoning	A bacterial disease. The bacteria produces toxins which cause fever, stomach cramps, vomiting and diarrhoea

Gonorrhoea	A bacterial sexually transmitted disease. Causes pain when urinating, green or yellow discharge from the vagina or penis. Antibiotics can be used to treat and condoms prevent the spread
The body's non-specific defence systems	Features that stop pathogens entering the body e.g. the skin is a barrier, hair and mucus in the airways trap pathogens, cilia in the trachea and bronchi waft the mucus back up, stomach acid kills pathogens
White blood cells	If pathogens do get into the body the immune system is needed. White blood cells are part of the immune system, they travel in the blood. They can engulf pathogens and digest them (phagoctyosis), produce anti-toxins, produce antibodies (to bind to the antigens found on the surface of the pathogen)
Lymphocyte	A type of white blood cell. B-lymphocytes produce antibodies
Vaccinations	Involve injecting small amounts of dead or inactive pathogens. Even though these are harmless they still carry the antigens, causing white blood cells to produce antibodies against them. If the live pathogen ever enters the body later then the white blood cells can rapidly produce the antibodies to kill the pathogen before you feel ill = you are immune
Epidemics	Big outbreaks of disease. These can be prevented if a large percentage of the population is vaccinated
Painkillers	Drugs that reduce pain e.g. aspirin and paracetamol. They do not treat the cause of the disease
Antibiotics	They kill or prevent the growth of bacteria e.g. penicillin. Different antibiotics kill different bacteria
Antibiotic resistance	Bacteria can randomly mutate causing them to be resistant to certain antibiotics. Resistant bacteria are more likely to survive and reproduce, meaning the population of the resistant strain increases (natural selection) e.g. MRSA
Origin of drugs	Plants and microorganisms produce lots of chemicals, which we use in medicines e.g. asprin was developed from willows, digitalis used to treat heart conditions was developed from fox gloves, penicillin was discovered by Fleming and was produced by a fungus
Drug testing	3 main stages: preclinical testing on human cells, preclinical testing on live animals then clinical testing on human volunteers

Preclinical trials	Drugs are first tested on human cells in a lab. Next live animals are used to test for **efficacy** (whether the drug works and produces the effect you're looking for), to find out about **toxicity** (how harmful it is) and to find the best dosage (the concentration that should be given and how often)
Clinical trials	If a drug passes the tests on animals it is then tested on healthy volunteers (low dosage used first, looking for harmful side effects). If results are good the drug can then be tested on humans with the disease to find the **optimum dose** (dose that's most effective, with the least side effects)
Placebos	A placebo is given like the drug that's being tested but it doesn't do anything (usually a tablet or an injection with no drug added). Patients in a clinical trial are split into 2 groups; 1 is given the drug and 1 the placebo. Placebos are given so the doctor can see the actual difference the drug makes
Blind clinical trial	The patient doesn't know if they have taken the actual drug or the placebo
Double-blind clinical trial	Neither the patient nor the doctor knows if the patient has taken the drug or the placebo. This helps to prevent bias when results are analysed
Monoclonal antibodies (TRIPLE)	Antibodies produced from lots of clones of a single white blood cell (lymphocyte), meaning the antibodies are all identical and will only target one specific antigen. Tumour cells are used to produce the monoclonal antibodies (as they divide rapidly), called hybridoma cells. Monoclonal antibodies are used in pregnancy tests, cancer treatment, to detect banned drugs and to locate specific molecules on cells by first binding the antibodies to a fluorescent dye
Hybridoma (TRIPLE)	When a B-lymphocyte and a tumour cell fuse, the resulting cell is called a hybridoma. Hybridoma cells can be cloned and will all produce the same antibodies, which can be collected and purified
Plant deficiency diseases (TRIPLE)	Plants need minerals from the soil. A lack of nitrates cause stunted growth, a lack of magnesium means the plant can't produce enough chlorophyll for photosynthesis
Plant defences against pathogens (TRIPLE)	Physical defences: waxy cuticle acts as a barrier, cell walls acts as a barrier Chemical defences: some produce antibacterial chemicals e.g. witch hazel and some produce

	poisons to prevent them from being eaten e.g. foxgloves, deadly nightshade Mechanical defences: thorns and hairs, leaves that curl when something touches it to knock insects off them, mimicry e.g. plants in the ice plant family look like stones so they don't get eaten