AQA Biology GCSE

3.1 - Communicable Diseases

Flashcards

What is a communicable disease?

What is a communicable disease?

A disease caused by a pathogen which can be passed between animals or plants eg. flu.

What is a pathogen?

What is a pathogen?

A disease-causing microorganism e.g. bacteria.

How do bacteria cause disease?

How do bacteria cause disease?

Once inside the body, they divide rapidly by binary fission. They kill cells and produce harmful toxins.

How do viruses cause disease?

How do viruses cause disease?

They invade and reproduce inside living body cells, leading to cell damage.

Give three ways in which pathogens can be spread

Give three ways in which pathogens can be spread

- By air - flu, tuberculosis and the common cold are spread by droplet infection.
- By water - fungal spores in water spread plant diseases.
- By direct contact - common in plant diseases and sexually transmitted infections.

Give four ways in which the spread of pathogens can be reduced

Give four ways in which the spread of pathogens can be reduced

- Hygiene - handwashing, disinfectants, tissues.
- Reducing contact with infected individuals - quarantine.
- Removing vectors - use of pesticides and insecticides, removal of habitats.
- Vaccination.

Why is it especially important to prevent the spread of viral diseases?

Why is it especially important to prevent the spread of viral diseases?

Scientists have not yet developed cures for many viral diseases.

What is measles?

What is measles?

Measles is a serious viral disease that can cause blindness and brain damage. The main symptoms are a fever and a red skin rash.

How is measles spread?

How is measles spread?

By air - through the inhalation of droplets from coughs and sneezes.

What is HIV/AIDS?

What is HIV/AIDS?

HIV is a virus which attacks and damages the immune system until it can no longer function properly. AIDS is the condition resulting from a long-term HIV infection. There is no cure or vaccine for HIV/AIDS.

How is HIV spread?

How is HIV spread?

Direct sexual contact and the exchange of bodily fluids eg. blood, breastmilk.

How can the spread of HIV/AIDS be prevented?

How can the spread of HIV/AIDS be prevented?

- Use of condoms
- Screening of blood for transfusions
- Not sharing needles
- Bottle-feeding by HIV-positive mothers
- Use of antiretroviral drugs to prevent the development of AIDS

What is tobacco mosaic virus?

What is tobacco mosaic virus?

A plant pathogen which causes leaf discolouration when cells are damaged. Affected areas cannot photosynthesise, reducing the crop yield. As there is no treatment, farmers grow TMV-resistant crop strains to avoid infection.

How is tobacco mosaic virus spread?

How is tobacco mosaic virus spread?

Contact between infected and healthy plants. Insects may act as vectors which transfer the virus between different plants.

What is salmonella?

What is salmonella?

A type of bacteria found in raw meat, poultry and eggs. If they enter the body via food poisoning, they can affect natural gut bacteria.

What are the symptoms of salmonella food poisoning?

What are the symptoms of salmonella food poisoning?

- Fever
- Abdominal cramping
- Vomiting
- Diarrhoea

May be fatal in very young or elderly populations due the risk of dehydration.

How can the spread of salmonella be limited?

How can the spread of salmonella be limited?

- Vaccinating animals intended for consumption
- Keep raw meat away from cooked meat
- Disinfect hands and surfaces after contact with raw meat
- Thoroughly cook meat

What is gonorrhoea?

What is gonorrhoea?

A sexually transmitted bacterial infection caused by unprotected sex with an infected individual. Early symptoms include yellow/green discharge from genitals and painful urination, although it may be symptomless.

Its spread can be controlled through the use of antibiotics (no longer penicillin as many strains are resistant) and using condoms.

What is rose black spot?

What is rose black spot?

A fungal disease which causes purple or black spots to develop on rose leaves. It reduces the area of the leaf which is available for photosynthesis and causes leaves to turn yellow and drop prematurely.

How is the rose black spot fungus spread?

How is the rose black spot fungus spread?

Fungal spores are spread by the wind and in water.

How can the rose black spot fungus be treated?

How can the rose black spot fungus be treated?

- Using fungicides
- Destroying infected leaves

What is malaria?

What is malaria?

Malaria is a disease caused by protist pathogens. The disease is carried from host to host by mosquitoes, and the protists enter the human bloodstream when they feed. Symptoms include fever and shaking, and it may also be fatal in some cases.

How can the spread of malaria be reduced?

How can the spread of malaria be reduced?

- Using insecticides
- Using insect nets to avoid bites
- Prevent mosquito breeding by removing stagnant water
- Antimalarial drugs

How does the skin prevent pathogens from entering the body?

How does the skin prevent pathogens from entering the body?

- Acts as a physical barrier.
- Scab formation after skin is cut/wounded.
- Antimicrobial secretions which can kill pathogens.
- Healthy skin flora compete with pathogens and act as an additional barrier.

How does the respiratory system prevent pathogens from entering the body?

How does the respiratory system prevent pathogens from entering the body?

- Nose - has hairs and mucus which trap pathogens.
- Trachea and bronchi - have mucus that traps pathogens. Ciliated cells move mucus to the mouth so it can be swallowed.

How does the stomach prevent pathogens infecting the body?

How does the stomach prevent pathogens infecting the body?

- Secretes hydrochloric acid - kills any pathogens present.

How does phagocytosis protect us against disease?

How does phagocytosis protect us against disease?

White blood cells (phagocytes) ingest and destroy pathogens so they cannot infect more cells.

How does antibody production protect us against disease?

How does antibody production protect us against disease?

White blood cells produce antibodies which are complementary to a specific antigen on a pathogen. The binding of antibodies to antigens causes pathogens to clump together, making them easier to destroy. In the case of a second infection, the correct antibodies can be produced rapidly, preventing the person getting the same disease again.

How does antitoxin production protect us against disease?

How does antitoxin production protect us against disease?

Antitoxins bind to toxins released by pathogens and neutralise them.

What is a vaccination?

What is a vaccination?

Contains a dead or inactivated form of the pathogen which stimulates white blood cells to produce complementary antibodies to the pathogen. In the case of a second infection, memory cells can rapidly produce the correct antibodies and prevent illness.

What is herd immunity?

What is herd immunity?

If a sufficiently high proportion of a population are immune to a disease (especially through vaccination), the spread of this disease will be limited.

What are the advantages of vaccinations?

What are the advantages of vaccinations?

- They have eradicated many deadly diseases eg. smallpox.
- Many epidemics can be prevented by vaccinations.
- Herd immunity protects those who cannot have vaccinations.

What are the disadvantages of vaccinations?

What are the disadvantages of vaccinations?

- Not guaranteed to work - might not protect against multiple strains of a pathogen.
- May be side effects or adverse reactions.

What drugs are used to cure some bacterial diseases?

What drugs are used to cure some bacterial diseases?

Antibiotics - they can kill bacterial pathogens inside the body.

How do antibiotics work?

How do antibiotics work?

Antibiotics eg. penicillin kill bacterial pathogens inside the body, but do not kill human cells. Whilst some antibiotics kill a wide range of bacteria, it is important that the right antibiotic is used for specific bacteria.

Why can antibiotics not be used to treat viral diseases?

Why can antibiotics not be used to treat viral diseases?

Antibiotics have no effect on viral pathogens as they live inside the host's (human) cells. Therefore, it is difficult to design drugs that would kill the virus and not destroy human cells at the same time.

What is antibiotic resistance?

What is antibiotic resistance?

Antibiotic resistance occurs when mutations lead to individual bacteria being resistant to an antibiotic. These bacteria are able to survive, reproduce and pass on their alleles, leading to a greater proportion of antibiotic-resistant bacteria. This is concerning as some types of bacteria are becoming resistant to all known antibiotics, so the diseases that they cause cannot be cured.

How can we prevent antibiotic resistance?

How can we prevent antibiotic resistance?

- Avoid overuse and unnecessary use of antibiotics - eg. antibiotics are often used for viral infections.
- Finish antibiotic courses - to ensure all bacteria is killed.

What effect do painkillers have on infectious diseases?

What effect do painkillers have on infectious diseases?

Painkillers can only treat the symptoms but do not kill pathogens.

What plant is the heart drug digitalis extracted from?

What plant is the heart drug digitalis extracted from?

Foxgloves

What painkiller originates from a compound found in willow bark?

What painkiller originates from a compound found in willow bark?

Aspirin

What antibiotic was discovered by Alexander Fleming from a type of mould?

What antibiotic was discovered by Alexander Fleming from a type of mould?

Penicillin

What are the four qualities of a good medicine?

What are the four qualities of a good medicine?

- Effective
- Safe
- Stable
- Able to be taken in and removed easily

What three main factors are tested for when developing new drugs?

What three main factors are tested for when developing new drugs?

- Toxicity
- Efficacy
- Dose

How is preclinical testing carried out?

How is preclinical testing carried out?

In a laboratory - uses cells, tissues and live animals

How is clinical testing carried out?

How is clinical testing carried out?

Uses healthy volunteers and patients. Firstly, the drug is tested at a low dose on healthy people - then tested on patients and on a larger scale to find the optimum dose. Often, one group receive a placebo (not the test drug) and the other group receive the actual drug, in order to assess its efficacy.

What is the difference between a single-blind and a double-blind trial?

What is the difference between a single-blind and a double-blind trial?

In a single-blind trial, only the doctor knows whether the patient is receiving the drug or the placebo. In a double-blind trial, neither the patient nor the doctor knows. Double-blind trials help remove bias on the part of the doctor.

What is a peer review?

What is a peer review?

Where the results of drug trials are checked over by scientists knowledgeable in this field.