Biology

How pathogen spread

Through direct contact

- Some diseases spread through touch
- if you touch a surface or object that has been contaminated by a person who is infected then you can catch the disease
- For example athlete foot is a fungal disease that makes the skin itchy and flaky
- It's spreads while people touch the same surface as an infected person such as shower gym or towel

By water

- Some pathogens can spread when people drink or bath in dirty or contaminated water
- For example cholera is a bacterial infection that spread when a person drink water that has been contaminated with diarrhoea or someone who already has diarrhoea

By air

- Some pathogen camps spread when people in the air sneeze or cough
- some pathogens can travel through the air and enter the body when you breathe

- these pathogens can be carried in tiny droplets that came out when infected person cough or sneezes

Fighting disease

Your bodies first defence system
Non specific defense

Skin
- Skin acts like a barrier to stop pathogens from entering
- It also make anti microbial substances that kills the germs

Nose
- Nose has hair and mucus that trap the dust and the germs

Trachea and bronchie windpipe
- It makes the mucus to trap the germs
- they also have tiny hair called Celia which push mucus up to the throat where it is swallowed

Stomach
- It will make hydrochloric acid which kill germs that enter with food and mucus

These are called non specific defense because they protect against all kinds of pathogens not just one

The immune system second defense system

- If pathogens get inside your immune system will fight with them
- The main fighters are called white blood cells
- they move in your blood searching for germs

They fight germs in three ways

Eating the germs; phagocytosis

- some white blood cells eat germs
- they swallow the microbes
- then they digest them inside the cell

Making antibodies

- Every germ has a special shape on its surface
- this shape is called an antigen
- B Lymphocytes see this foreign antigen
- they make antibodies and that fit exactly only antigen
- the antibodies locked on to germs
- then otherwise blood cells can destroy the germs
- antibodies are specific one antibody works for only one type of

the same germ enter again

- white Blood cells remember it
- they make antibodies very fast
- you are now immune
- you do not get sick from the germ again

Vaccination

Vaccines stop illness before it happens

- When a New germ enters your body needs time to make antibodies and you may get sick
- Vaccination helps your body prepare early

What is inside a vaccine

- A vaccine contains dead pathogens
- They have antigens but they cannot cause disease

How vaccination works

- White blood cells make antibodies for these harmless germs
- Later if the real germ enter
- your body makes antibodies quickly
- you don't get sick

Alia is vaccinated , Fatima is not

both meet the flu virus

- Fatima gets sick because her body needs time to make antibodies

- Alia does not get sick because she already has the antibodies from the virus

Pros and cons of vaccination

Pros

- Vaccines have controlled or removed many diseases polio measles
- Smallpox is gone
- polio cases are reduced by 99%
- if many people are vaccinated big outbreaks are prevented
- even unvaccinated people stay safe

Cons

- Sometimes vaccines don't work
- rarely people may get small reactions such as swelling fever but these are very rare

Fighting diseases with drugs

Symptom revealing drug

- Painkillers that reduce the pain
- they do not kill the germs
- cold medicines only reduce symptoms not only infections

Antibiotics

- Antibiotics skill or stop bacteria
- they do not harm the body cells

- different antibiotics kill different bacteria
- antibiotics do not work on viruses like cold or flu because virus live inside cell

Antibiotic resistance

- In an infection some bacteria or already resistant
- When treated with antibiotics normal bacteria will die
- resistant bacteria survive
- resistant bacteria reproduce
- soon the whole population becomes resistant
- this is called natural selection

Example mrsa is a dangerous bacteria resistant to many antibiotics

How to prevent antibiotic resistant resistance

- Dr should not give antibiotics 2 Much
- patients must finish the full course even if they feel better