Y7 & 8 Infection and response (foundation)

START

Where do we get drugs from?
- From plants and animals.
- Today they are made in science labs.

How do we test new drugs.
1. Test on cells
2. Test on animals
3. Test on humans – Clinical trial
- Placebo is a fake drug that we use in human tests to see if the real drug works

What to antibiotics do?
- They kill bacteria in our bodies.
- They can't kill viruses.
- They do not damage other tissues in our bodies.
- They may just work against one type of bacteria.

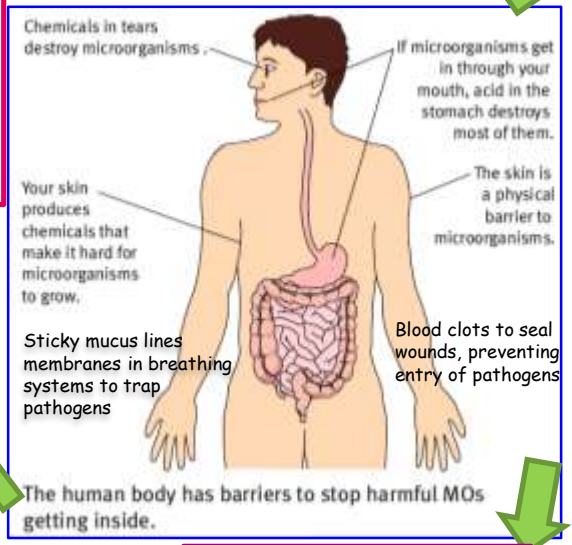
How is disease caused?
- Small living things called microorganisms cause disease.
- These are **bacteria**, **fungi**, **protists** and **viruses**.
- Microorganisms that cause disease are called **pathogens**.

How are diseases spread?
- Pathogens can be passed from person to person through physical contact.
- Some can move through the air or water.

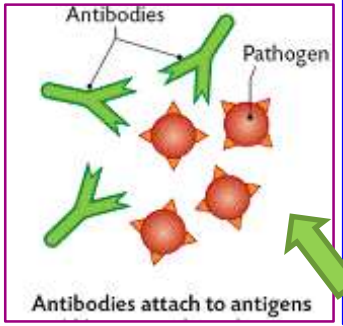
How do viruses and bacteria damage us?
- Viruses get inside our cells, reproduce then damage the cells.
- Bacteria make toxins that damage our cells and make us feel ill.

Key words:
1. **Pathogen:** A microorganism that makes us ill.
2. **Microorganism:** Bacteria, virus, fungi or protist.
3. **Communicable or Infectious disease:** Diseases that can be caught (passed on to other people).
4. **Antibiotic:** A type of drug that can kill bacteria.
5. **White Blood Cell:** A type of cell in the immune system.
6. **Vaccine**: A dead version of a pathogen used to prevent disease.
7. **Painkiller:** A type of drug used to stop pain.

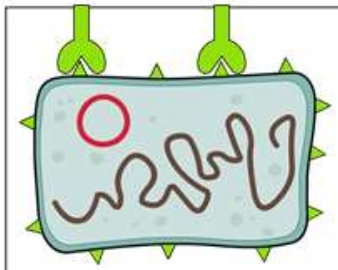
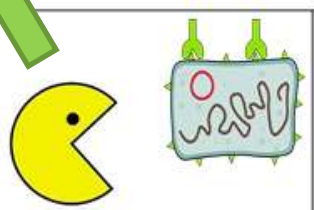
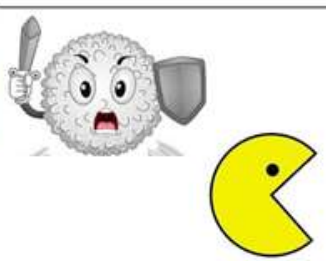
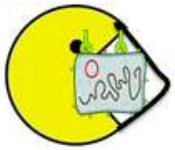
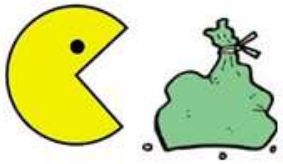
How does your body stop pathogens from getting in?



The human body has barriers to stop harmful MOs getting inside.



Antibodies attach to antigens

		
The White blood cells make antibodies, these have to be the right shape to fit the pathogen	The antibody takes the pathogen to the phagocyte	White blood cells make phagocytes These search for the pathogen
		
The phagocyte eats the pathogen	The phagocyte destroys and digests or breaks up the pathogen and spits out the waste	The person feels better as all of the pathogens are destroyed

Antibodies
- Antibody binds to the pathogen and takes it to the phagocyte

White Blood cells do 3 things:
1. Make **antibodies**
2. Make **phagocytes**
3. Make **antitoxins**

Phagocytes
- Engulf (eat) pathogens
- Destroy/digest pathogens

Antitoxins
- Released by white blood cells to make toxins harmless

1. What is a pathogen?
2. How can you catch a pathogen?
3. How do viruses make us ill?
4. How do bacteria make us ill?
5. What does our body do to stop pathogens from getting inside?
6. What do phagocytes do?
7. What do antibodies do?
8. What do antitoxins do?
9. What is a vaccine?
10. What do antibiotics do?
11. Where do we get drugs from?
12. What is a painkiller?
13. How do we test new drugs?

START

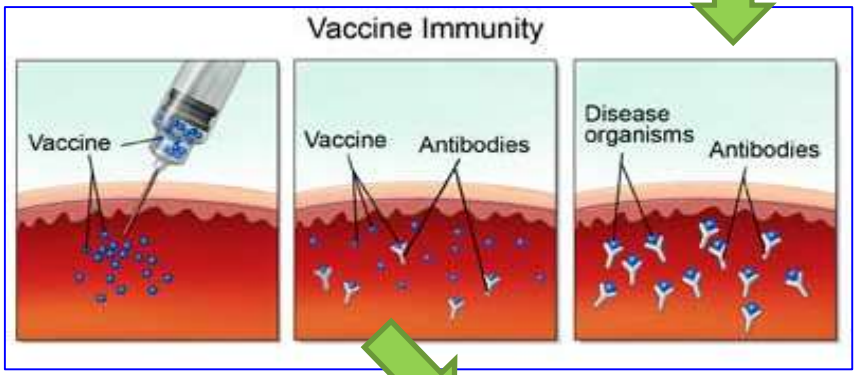
Examples of diseases

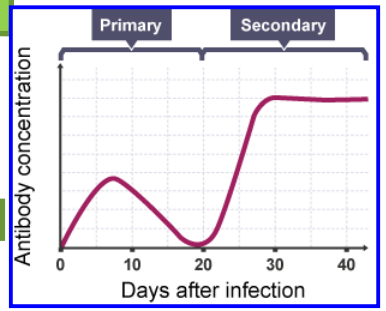
Type of pathogen	Human diseases/Plant diseases
Virus	Measles, Flu, HIV/ Tobacco mosaic virus
Protist	Malaria
Fungi	Athletes foot/ Rose black spot
Bacteria	Salmonella, gonorrhoea

Y7 & 8 Infection and response (Foundation + Higher)

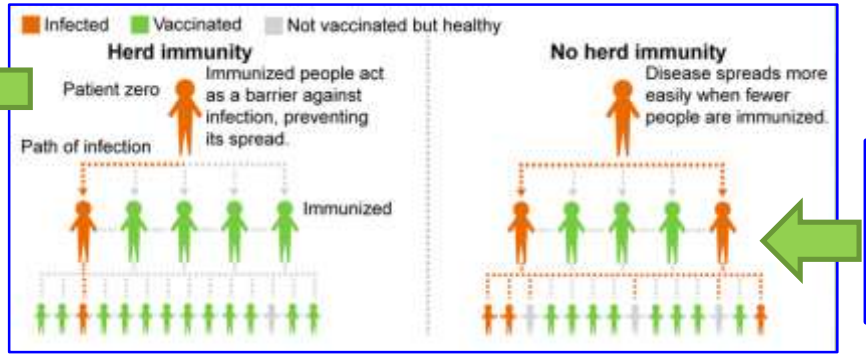
VACCINATION

How do vaccines work?
- Vaccines prevent illness, but can't cure it.
- A dead or inactive version of a pathogen is injected into a person.
- This makes white blood cells make antibodies to fight the infection.
- If the real pathogen enters the body, white blood cells remember how to fight it and do so quickly.





If more people are vaccinated against a disease it will be harder for the disease to spread. This is called herd immunity



Vaccines have side effects like:
- Feeling tired
- Feeling sick
- Fever
- Rash
- Swelling + pain at the injection site

BUT
It is still better to be vaccinated