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# Health & Disease

1	I can explain the consequences of imbalances of the diet.
2	I can state examples of non-communicable diseases and their risk factors.
3	I can define a pathogen as a disease-causing microorganism, with examples of each.
4	I can describe what the body’s primary defences are
5	I can explain the role of the white blood cells in the body
6	I can explain how a vaccination works to keep us safe.

Key word	Definition
Antibiotic	A drug that kills bacteria.
Antibody	A molecule produced the immune system in response to infection by a pathogen.
Antigen	A molecule found on the surface of pathogen molecules.
Communicable disease	A disease caused by a pathogen that can be passed from one organism to another.
Non-communicable disease	A disease that is not infectious that cannot be passed from one organism to another.
Painkiller	A drug that reduces pain.
Pathogen	A microorganism that causes disease.
Vaccination	The injection of a dead or inactive pathogen to stimulate an organism’s immune system.
White blood cell	Blood cells involved in the immune system of the body. They engulf pathogens and make antibodies and antitoxins.

**Prior Knowledge From KS2:**  
In KS2 you already know that diet, exercise, drugs and lifestyle have an impact on the way that the human body functions.

**Why?**  
Being able to make informed choices about health and healthy lifestyles will have important implications for the individual and nation's health.

**Future Learning:**  
GCSE topic Immunology will look at communicable disease and the immune response. Health issues will explore non-communicable disease further.

**Careers:**  
Endocrinologist  
Biologist  
Doctor  
Nurse

## Nutrients

A **balanced diet** involves eating the right amount of nutrients for your body to function. Not eating enough of a nutrient means you have an unbalanced diet, and this can lead to a **deficiency**.

Nutrient	Role in your body
Carbohydrates	Main source of energy
Lipids	Fats and oils provide energy and insulation for organs
Proteins	Growth and repair of cells and tissues
Vitamins & minerals	Essential in small amounts to keep you healthy
Water	Needed in all cells and bodily fluids
Fibre	Helps food move through the digestive system

## Medicines

**Antibiotics** are a type of drug used to treat bacterial infections. They don't work against other pathogens.



**Painkillers** can treat the symptoms of an infection (reduce pain), but don't affect the pathogen. They can also help reduce muscular or other body pain.

## Defence Against Disease

The body has **physical** and **chemical barriers** to prevent **pathogens** entering the body. These include the skin, tears, acid in the stomach and mucus in the lungs.

If pathogens do enter the body, they can **replicate** quickly. We call this an **infection**. Infections by pathogens can cause a variety of **symptoms**. The symptoms depend on the type of pathogen and whether it infects one specific area or spreads around the body. Examples of symptoms could include headache or fever.

When you get an infection, your **immune system** works to destroy the pathogens.



**White blood cells** work in different ways to destroy the pathogens.

⇒ **Phagocytes** engulf and digest the pathogen.

⇒ **Lymphocytes** produce **antibodies** that can help identify the pathogen and 'flag' it for phagocytes.

Antibodies are produced slowly the first time you get infected by a particular pathogen, but if you get infected again they are produced very quickly. This means that on the second infection you might not experience symptoms.

**Vaccinations** expose your immune system to a dead or harmless version of the pathogen.

The immune system reacts to the vaccine but you don't experience symptoms. If you encounter the live pathogen in the future, antibodies are produced rapidly and you don't get ill.

## Drugs

**Drugs** are chemicals that affect the way that our body works.

**Medicinal drugs** are used in medicine, they benefit health, however if medicinal drugs are not taken in the correct way they can harm health. Examples include **insulin**, **antibiotics** and **painkillers**.

**Recreational drugs** are taken by people for enjoyment.

Recreational drugs normally have no health benefits and can be harmful for health. Examples include alcohol and tobacco, as well as illegal drugs.



**Drug addiction** is when your body gets so used to a drug, it feels it cannot cope without it.

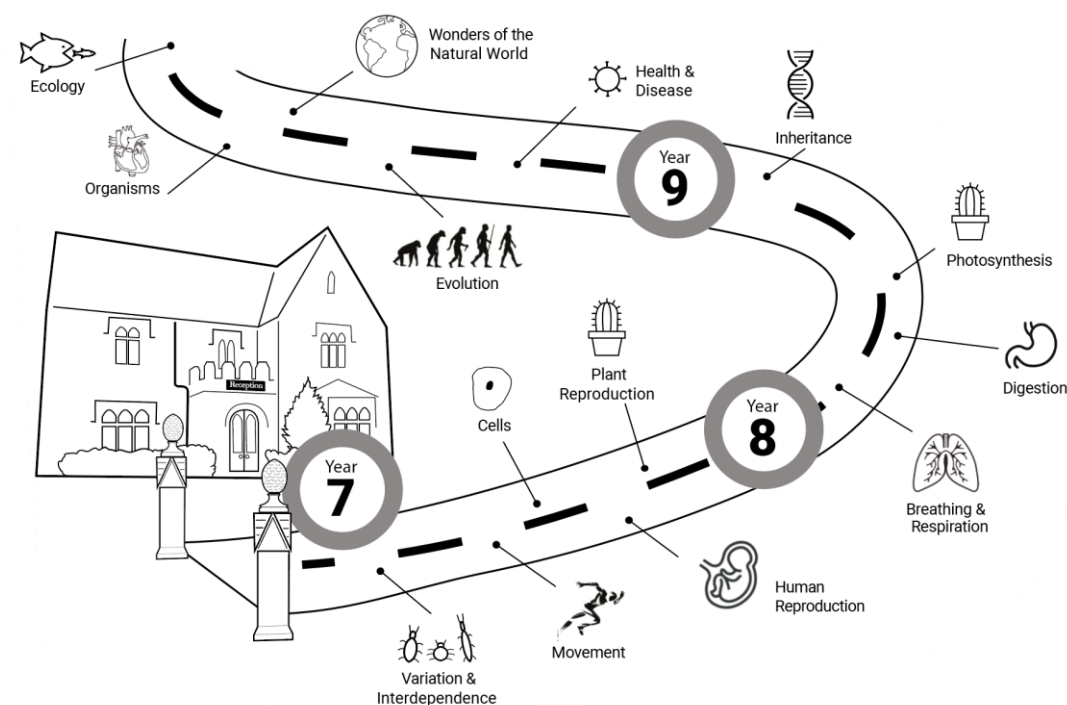
If someone who has an addiction stops taking the drug, they will experience **withdrawal symptoms**.

## Diabetes

**Diabetes** is a disease that affects a person's ability to control their blood sugar levels.

**Type 1** diabetics do not produce the hormone insulin, so they need to inject insulin before meals to help control their blood sugar.

**Type 2** diabetics produce insulin but their cells do not respond in the normal way. Type 2 diabetes can be controlled by diet so insulin injection isn't required.



Topic	1 Point	2 Points	4 Points	6 Points	10 Points
<b>Non-communicable disease</b> 	List three non-communicable diseases.	Pick a non-communicable disease and write how it is treated.	Describe how a poor lifestyle can lead to non-communicable disease. You can keep it general or go into detail about one specific non-communicable disease.	Produce an NHS website style page on a non-communicable disease of your choice. You must include the cause, symptoms and treatments.	Make a set of 10 question cards with answers to pick out of a hat.
<b>Medicinal and recreational drugs</b> 	What is the definition of the term 'drug'.	Describe the difference between a recreational drug, and a medicinal drug.	Explain the difference between an antibiotic and a painkiller.	Make up a wordsearch using keywords from the topic. Make up a sentence about each key word, as a clue.	Create an information leaflet on the dangers of taking recreational drugs.
<b>Communicable disease</b> 	Define the word 'pathogen'	Draw, or print out a picture of what each type of pathogen looks like under the microscope.	Write a 'dating profile' for each type of pathogen.	Make a short presentation on a communicable disease that can effect plants. Two examples include 'rose black spot' and 'tobacco mosaic virus'	Design a game to help the class revise the work on health and disease.