Your notes

GCSE Biology: revision notes

Non-communicable diseases

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Start here: two kinds of disease

- A **communicable disease** spreads from person to person, like flu. A **non-communicable disease** does not: you cannot catch heart disease or most **cancers**.
- **Non-communicable diseases** are linked to **risk factors**: things that make a disease more likely, such as smoking, an unhealthy diet, alcohol or too little exercise.
- A **risk factor** does not mean someone will get the disease; it raises the chance. Scientists find **risk factors** by looking for **correlations** in large studies.

Health and disease

- **Health** is a state of physical and mental wellbeing.
- Diseases, both communicable and non-communicable, are major causes of ill **health**. Diet, stress and life situations also affect **health**.
- **Communicable diseases** can spread between people; **non-communicable diseases** cannot.

How diseases interact

- Defects in the immune system make a person more likely to catch infectious diseases.
- Some viruses living in cells can trigger **cancer**; for example, some types of HPV can cause cervical **cancer**.

- Immune reactions to a pathogen can trigger allergies such as skin rashes or asthma.
- Severe physical ill **health** can lead to mental illness such as depression.

Risk factors

- A **risk factor** is linked to an increased rate of a disease. It can be an aspect of lifestyle or a substance in the body or environment.
- Diet, smoking and lack of exercise increase the risk of **cardiovascular disease**.
- Obesity is a **risk factor** for Type 2 diabetes.
- Alcohol damages the liver and affects brain function. Smoking causes lung disease and lung **cancer**.
- Smoking and drinking alcohol during pregnancy can harm the unborn baby.
- **Carcinogens**, including ionising radiation, are **risk factors** for **cancer**.

Correlation and cause

- Many diseases are caused by several **risk factors** working together.
- A **correlation** between a factor and a disease does not prove the factor causes it; scientists need to find a mechanism.
- **Non-communicable diseases** have human costs (suffering, early death) and financial costs to individuals, the NHS and the economy, at local, national and global levels.

Cancer

- **Cancer** is the result of changes in cells that lead to uncontrolled growth and division.
- **Benign tumours** are growths of abnormal cells contained in one area, usually within a membrane. They do not invade other parts of the body.
- **Malignant tumours** are **cancers**. They invade neighbouring tissues and spread in the blood to other parts of the body, forming secondary tumours.
- Lifestyle **risk factors** (such as smoking, UV exposure and obesity) and genetic **risk factors** (such as inherited faulty genes) are linked to some **cancers**.

Exam tip

- With data on **risk factors**, quote numbers from the graph, and say whether it shows a **correlation**. A **correlation** alone doesn't prove a cause.

Common mistakes

- Saying a **risk factor** always causes a disease. It only makes it more likely.
- Mixing up **benign tumours** (which stay in one place) and malignant ones (which invade and spread).

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Worked examples

In a study, 15 of 600 smokers and 3 of 400 non-smokers got a disease. How many times more likely were smokers to get it?

Smokers: divide the number who got it by the number in the group. **15 ÷ 600 = 0.025 (2.5%)**

Non-smokers, the same way. **3 ÷ 400 = 0.0075 (0.75%)**

Divide one by the other to compare. **0.025 ÷ 0.0075 = 3.3**

Answer: About 3 times more likely (a correlation; the study alone does not prove smoking caused it)

Key terms

Health	A state of physical and mental wellbeing.
Non-communicable disease	A disease that cannot be passed from one person to another, such as heart disease.
Communicable disease	A disease caused by a pathogen that can spread between people or animals.
Risk factor	Something linked to an increased chance of developing a disease.
Carcinogen	A substance or agent, such as tobacco smoke or ionising radiation, that can cause cancer.
Cancer	A disease caused by changes in cells that lead to uncontrolled growth and division.
Benign tumour	A growth of abnormal cells that stays in one area and does not spread.
Malignant tumour	A cancerous growth that invades tissues and can spread to form secondary tumours.
Correlation	A link between two variables; it does not prove that one causes the other.
Cardiovascular disease	A disease of the heart or blood vessels.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What is health?
2. Which of these is a non-communicable disease?
3. Which risk factor is strongly linked to Type 2 diabetes?
4. Which organ is damaged by drinking too much alcohol over a long time?
5. What is a carcinogen?
6. What is the main difference between benign and malignant tumours?

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7. How do malignant tumour cells spread to other parts of the body?
8. Which virus can cause cervical cancer?

Answers

1. A state of physical and mental wellbeing
2. Coronary heart disease
3. Obesity
4. The liver
5. Something that can cause cancer
6. Malignant tumours invade tissues and spread
7. In the blood
8. Human papillomavirus (HPV)

What to do next

Practise 12 questions on this topic

Try 7 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

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