Ormiston Victory Academy

Subject: Science - Biology

Victory Vitals

B6 – Preventing and treating disease

Developing Drugs

There are three main stages in drug testing:

Pre-clinical testing:

1. Drugs are tested on human cells and tissues.
2. Testing carried out on living animals.

Clinical testing:

3. Tested on healthy human volunteers in clinical trials. Starts with a very low dose, then tested on people with the illness to find the optimum dose.

Placebo is a substance that is like the drug, but does not do anything.

Placebo effect is when the patient thinks the treatment will work even though their treatment isn't doing anything.

Blind trial is when the patient does not know whether they are getting the drug or the placebo.

Double-blind trial is when both the doctor and the patient do not know whether they are getting the drug.

Drugs from Plants

Chemicals produced by plants to defend themselves can be used to treat human diseases or help with symptoms.

Drug	Plant/Microorganism
aspirin	willow
digitalis	foxglove
penicillin	mould - penicillium

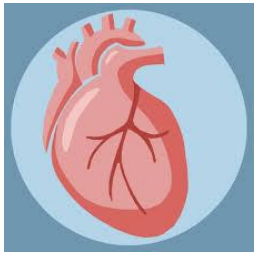
New drugs are now made by chemists, who work for the pharmaceutical industry, in laboratories.

Vaccines have been developed to protect us from future infections. A vaccination involves an injection of a **dead or weakened** version of the pathogen. They carry **antigens** which cause your body to **produce antibodies** which will attack the pathogen. If you are infected again, the white blood cells can produce antibodies quickly

B7 – Non-communicable diseases

Non-communicable diseases are not transferred between people or other organisms.

Non-communicable diseases include:
-cancer
- diabetes
- genetic diseases and conditions
- heart disease
- neurological disorders



Cancer

Cells grow then divide by **mitosis** only when we need new ones – when we're growing or need to replace old or damaged cells. When a cell becomes cancerous, it begins to grow and **divide uncontrollably**. New cells are produced – even if the body does not need them.

A group of cancerous cells produces a growth called a **tumour**. There are two types of tumour - benign and malignant

Smoking increases the risk of cardiovascular disease in several ways:

- Smoking damages the lining of the arteries, including the coronary arteries. The damage encourages the **build-up of fatty material** in the arteries. This can lead to a heart attack or a stroke.
- Inhalation of **carbon monoxide** in cigarette smoke reduces the amount of oxygen that can be carried by the blood.
- The **nicotine** in cigarette smoke increases the heart rate, putting strain on the heart.
- Chemicals in cigarette smoke increase the likelihood of **the blood clotting,** resulting in a heart attack or stroke.

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Key vocabulary:

Antigen - A protein on the surface of a substance (often a pathogen) that triggers an immune response.
Efficacy - The ability of a drug to cure a condition or relieve symptoms.
Pathogen - Microorganism that causes disease.
Benign tumour - A tumour that is slow-growing and non-invasive, and is therefore not cancerous.
Carcinogen - A chemical or other agent which causes cancer.
Cirrhosis - Scarring of the liver, which can be caused by alcoholism or hepatitis.
Correlation - A relationship between two sets of data, such that when one set changes you would expect the other set to change as well.
Diabetes - A serious disease in which the body is unable to regulate blood sugar.
Emphysema - Disease in which the walls of the alveoli break down, reducing the surface area for gas exchange in the lungs.
Malignant tumour - A fast-growing tumour that is cancerous and can invade and spread to other areas of the body.
Risk factor - Something that increases a person's chances of developing a disease.

Videos

Quizzes