DRUGS

DRUG is any substance that is taken into the body that alters or influences chemical reactions in the body

⇒ DRUGS could be:

→ MEDICAL DRUGS: Used to treat diseases, or reduce the sensation of pain
Eg: Aspirin, Morphine, Antibiotics

→ RECREATIONAL DRUGS:

– HALLUCINOGENS: Cause psychedelic visions for the drug user.
Eg: LSD (Lysergic Acid Diethylamide)

– STIMULANT: Mood enhancing drugs which give the user a short-lived feeling of well being & energy.
Eg: Cocaine, Ecstasy, Amphetamines.

– DEPRESSANTS: Slows down the nervous system
Eg: Heroin

– SOCIALLY ACCEPTED DRUGS: Taken for their pleasurable effects. Also they help people relax or concentrate.
Eg: Alcohol, Nicotine, Caffeine

→ DRUGS & THE BODY:

→ Drugs interfere with the way that the nervous system works.

→ Some drugs can act as synapses & change the way in which neurons send impulses.

→ Drugs are broken down in the body by enzymes & the products are excreted.

→ The breakdown products can be detected in the urine & thats why urine tests are carried out to see if people have been taking drugs.

→ ADDICTION:

- Some drugs have the potential to be addictive
- If the body comes to rely on the drug, a person can become addicted & feel the need to take it regularly.
- The body's metabolism may become used to the drug & the liver may produce more enzymes to break it down. so that the dose of the drug has to increase to have the effect that the user first experianced
- This is what leads to development of drug tolerance.

→ DRUG TOLERANCE:

- This means that people take more of the drug to achieve the same effect.
- The person becomes dependent on the drug.
- When people stop taking the drug they may experiance WITHDRAWAL SYMPTOMS → can vary from nausea to severe cramp
- This makes giving up the drug very difficult.

⇒ ANTIBIOTICS:

→ Antibiotics are a group of chemicals made by microorganisms that are used in chemotherapy as the kill pathogens or stop their growth

→ Many antibiotics are synthesised artificially because:
- it is more reliable way
- it makes them more effective.
- it reduces their side-effects.

→ Antibiotics are used to treat & cure human & animal diseases caused by bacteria & fungi.

→ Eg: Penicillin acts on bacteria by inhibiting cell wall formation, leading to break down of cell wall & leakage of cell contents

→ Other examples - tetracyclines, polymyxins &, sulfa drugs.

→ NARROW SPECTRUM ANTIBIOTICS - Act only on a few species of bacteria

→ BROAD SPECTRUM ANTIBIOTICS - Act on many species of bacteria

→ Antibiotics don't act on viruses. Viruses are not cells They don't carry out their own metabolism but rely on the hosts body for reproduction

→ To control viruses we need to use antibiotics that inhibit human metabolism & that is not possible

→ However, antiviral drugs are available.

⇒ HEROIN :

→ Heroin is a compound modified from morphine(which is extracted from opium & poppies & used as painkiller)

→ It is highly addictive & a powerful depressant that slows down the nervous system

→ Its molecular structure similar to that of ENDORPHINE which is body's natural painkiller.

→ It slows down impulses along neurons transferring information from pain receptors to the brain

→ When people take heroin for the 1st time, the feel a feeling of contentment & intense happiness. This is called EUPHORIA

→ Tolerance is developed when more & more heroin is needed by the body to prevent nerve cells sending impulses to the brain as the body doesn't produce its natural painkillers

→ If the drug isn't taken, the pain becomes unbearable

→ The amount of drug taken has to be greater in order to feel euphoria

→ Addiction occurs within 2-3 weeks of consumption

→ It could be taken by smoking, sniffing or injecting it into the vein.

→ Injecting can cause veins to collapse & tissues surrounding start to die giving the condition known as gangrene

→ There is a risk of transmission of the HIV if addicts exchange needles or syringes

→ The drug can be expensive which drives many people to become criminals in order to fund their habit.

→ Addiction makes it difficult keep a job. This leads to family breakdowns & homelessness & also isolation from society

→ Withdrawal symptoms include
- sleeplessness
- hallucinations
- muscle cramps
- sweating
- vomiting
- nausea

} known as COLD TURKEY

⇒ OVERCOMING HEROIN:

→ Needs great deal of will power & support from others

→ Rehabilitation which involves staying in a treatment centre

→ Methadone is given which has same effects as heroin. The treatment consists of gradually reducing the dose

⇒ ALCOHOL:

→ When alcohol is consumed, its absorbed into the blood very quickly because it is a very small molecule & doesn't need to be digested

→ It is also soluble in cell membranes, so it is absorbed very quickly through the wall of the stomach & small intestine.

→ Alcohol gets distributed throughout body through blood

→ It is absorbed by liver cells & broken down by enzymes. This process quicker in men that it is in women because in men these enzymes tend to be more active

→ Men also have more water & less fat in their bodies which tends to cause the concentration of the alcohol in the blood to decrease more quickly

→ Alcohol is a depressant. It affects brain by slowing down the transmission of nerve impulses

→ In small quantities alcohol has the effect of removing inhibitions so people find it easier to socialise with others

→ With larger quantities it leads to loss of co-ordination, judgement & control of movements because the first part it affects cerebellum

→ Alcohol doesn't lead to addiction as quickly if at all Many people drink alcohol in small to moderate quantities throughout their lives without becoming addicted.

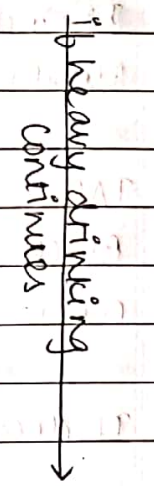
→ Alcoholics (people dependent on alcohol) develop tolerance as more enzymes that metabolise alcohol are made in the liver. They therefore need to take greater quantities of alcohol to get the same effect.

→ Without drink they find it hard to cope with everyday problems.

→ The misuse of alcohol is a factor in -
- crime & violence including murders
- family disputes
- marital breakdown
- child neglect & abuse
- absenteeism from work
- vandalism
- road accidents

→ LONG TERM EFFECTS of alcohol:
- Stomach ulcers
- Heart diseases
- Brain damage
- Obesity

- Fatty liver (fat is stored & built up in liver)
  ↓
  Liver gets damaged
  ↓
  It needs to be replaced by fibrous scar tissue
  ↓
  Liver becomes full of nodules – cirrhosis
  ↓
  Liver becomes less able to remove toxins



- Drinking during pregnancy can damage the fetus, increase the risk of miscarriage or premature birth & reduce the average birth weight

⇒ SMOKING & HEALTH:

→ COMPONENTS of Tobacco Smoke: Nicotine
Tar
CO
smoke particles

→ NICOTINE

- It has molecular structure that allows it to interact with the nervous system.

- It is absorbed very quickly by alveoli

- It interacts with nerve cells at impulses. It is a stimulant

- It makes the heart beat faster & narrows the arterioles which increases the blood pressure

- It increases the stickiness of the platelets that promote blood clotting. Also more force is needed to push it.

→ TAR:

- Black sticky material that collects in the lungs as smoke cools
- It doesn't pass into the bloodstream
- It irritates the lining of the airways & stimulates them to produce more mucus. Cilia is damaged because of smoking, so the mucus isn't removed & the airways are narrowed.
- Development of smoker's cough as this material is moved back to the throat
- Some of the chemical compounds in the tar are carcinogens

→ CARBON MONOXIDE:

- Poisonous gas
- It is absorbed & combined with haemoglobin permanently & reduces the volume of oxygen that blood can carry by 10%.
- This puts extra strain on heart & makes it beat faster & harder

- Smoking during pregnancy prevents the fetus from developing properly because there might not be enough oxygen in the blood. Due to this, the baby might have smaller birth weight or could be premature

→ SMOKE PARTICLES:

- They are small burnt fragments of tobacco.

- They accumulate in lung tissue & stimulate the body's defence system to remove them

⇒ DISEASES CAUSED BY SMOKING:

→ CHRONIC BRONCHITIS & EMPHYSEMA:

- Tobacco smoke irritates the lining of the airways

- Mucus secreting cells produce more mucus in response but cilia stop beating.

- This means that the dust, dirt & bacteria that stick to it are not removed from the lungs.

- It accumulates & bacteria multiply. This stimulates the body's immune system to send phagocytes to the place where this happens - particularly the bronchi where particles settle out of the air

- The bronchi become blocked as large amounts of phlegm (mixture of mucus, bacteria & WBC) are produced which people attempt to cough up.

- This condition is called CHRONIC BRONCHITIS. People with this condition find it difficult to move air into or out of their lungs as bronchi are partly blocked

- Particles, bacteria & tar reach the alveoli.

- Phagocytes digest a pathway through the lining of the alveoli to reach them.

- Eventually this weakens the walls of the alveoli so much that they break down & burst reducing the surface area for gaseous exchange

- This condition is called EMPHYSEMA which leaves people gasping for breath as they cannot absorb enough oxygen or remove CO_2 efficiently

→ LUNG CANCER:

- Cause — carcinogens in tar which promote changes in DNA of cells lining the airways

- The cells grow & divide out of control & a group of cells known as tumour is formed.

- They start to occupy larger area & eventually block air ways & blood vessels. Tumour may break off & spread into other organs.

→ HEART DISEASE:

- Smoking increases the chances that fat will deposit in the walls of arteries.

- Nicotine increases chances of blood clot.

- There is an increased risk of CHD & heart muscles could be damaged.