

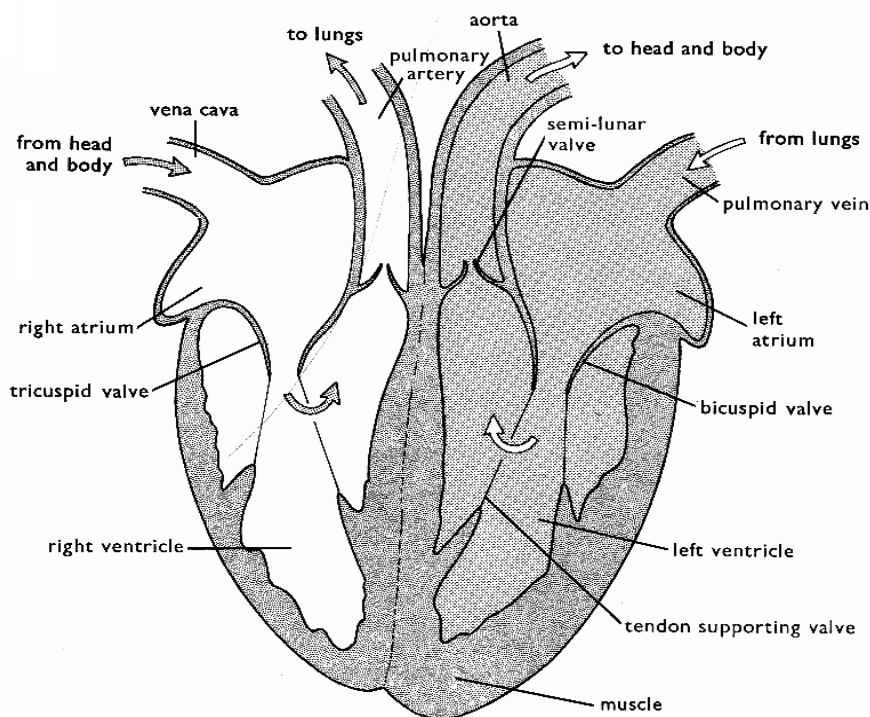
P.6 SCIENCE CLASSWORK NOTES

WEEK TWO: 15th JUNE: LESSON ONE.

THE HEART

- The heart is the main organ in mammalian body pumping blood continuously to all body parts.
- It's enclosed in the thorax in a tough membrane called pericardium.
- The heart has four chambers, the two upper chambers and two lower chambers.
- The heart is made up of cardiac muscles.

The structure of the human heart



Note:

The heart is protected by the ribcage and the normal pumping of the heart is 72 times per second.

Learners' Activity

- 1) Name the main organs of the circulatory system.
- 2) List the three blood vessels of the circulatory system
- 3) Apart from the red blood cells mention any other two components of blood.
- 4) What is the role of valves in veins
- 5) Identify any one disease of the circulatory system

LESSON 2: HOW THE HEART WORKS

Circulation of blood in the heart is supported by four main vessels. These are;

Vena cava, pulmonary artery, pulmonary vein and aorta.

Vena cava: receives blood with less oxygen called deoxygenated blood from all parts of the body to the heart.

- Blood is then pushed down from the right upper auricle, to the ventricle and then to the lungs via the pulmonary artery.
- Blood visits the lungs to pick oxygen and drop off carbondioxide.
- Oxygenated blood (blood with more oxygen) is then carried back to the heart through the pulmonary vein to be pumped to all parts of the body through the aorta.
- The heart has valves to prevent backward flow of blood in the heart.
- It also separated into two sides by the septum to avoid de-oxygenated blood from mixing with the oxygenated blood from mixing with the oxygenated blood.
- The left part of the heart is made up of thick walls due to its resistance to high blood pressure.
- Doctors are able to listen to the flow of blood or heart beat using an instrument called **stethoscope** and **asplymometer** for the blood pressure.

Learners' Activity

- 1) List the two upper chambers of the heart
- 2) Which blood vessel leads blood from the body to the heart
- 3) Which part of the heart pumps blood to the lungs
- 4) Why is the left ventricle wall thicker than the right ventricle wall
- 5) Why does blood flow to the lungs before it is supplied to the rest of the body parts?

LESSON 3: COMPONENTS OF BLOOD.

Blood

- ☞ Blood is the red liquid that flows continuously in the body.
- ☞ It becomes bright red when oxygenated and dark red when de-oxygenated.

Components of blood

Blood component are

- platelets (thrombocytes)
- plasma (fluid of blood)
- white blood cells (leucocytes)
- red blood cells (erythrocytes)

Note:An adult person has a capacity of 5-6 liters of blood in the body.

Red blood cells.

These are blood components made of circular disc shapes and oxygen.

- They are made in the red bone marrows of short bones.

- They appear red due to the existence of the haemoglobin.
- When the haemoglobin combines with oxygen it forms oxy-haemoglobin blood which is reddish/ bright in colour.

Diagram of a red 1



FUNCTION OF RED BLOOD CELLS

- Helps to carry oxygen around the body.

Note: Plasmodia parasites attack the red blood cells hence causing malaria to people.

PLASMA AND WHITE BLOOD CELLS

Blood plasma

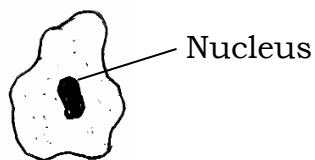
- It's the liquid or watery part of blood
- It's pale in colour.

Components of plasma

- ❖ Blood proteins, digested food, hormones and mineral salts, water.
- ❖ Blood plasma transports carbon dioxide from all body parts to the lungs.
- ❖ blood plasma transports digested food to all parts of the body
- ❖ Blood plasma also transports hormones from the glands to where they are needed.

White blood cells.(leucocytes)

These are blood cells with a nucleus but with no haemoglobin in their cytoplasm.



- ❖ White blood cells are commonly made from lymph nodes the spleen and grey bone of long bones.
- ❖ They help to fight against diseases causing germs in the body by engulfing and producing more anti bodies.
- ❖ The white blood cells have an irregular shape to enable them engulf the germs.
- ❖ Note :the nucleus controls all the activities of the white blood cell.

Blood platelets. (Thrombocytes)

- ❖ Blood platelets are also made in the red bone marrows.

- ❖ They help to reduce over bleeding by clotting around the wound.
- ❖ They are very many in the body with no nucleus and live shortly.

Diagrams showing different blood cells



Note:

- Shortages of blood platelets result into uncontrolled bleeding in case of a wound.
- Too many white blood cells in the body may cause a disease called leukemia.

Learners' Activity

- How useful are the following components of blood in the body?
 - Red blood cells
 - White blood cells
 - Platelets
 - Blood plasma
- Identify a disease that attacks the following
 - Red blood cells
 - White blood cells

LESSON FOUR: BLOOD VESSELS ARTERIES AND VEINS.

Blood vessels;

- Blood vessels are muscular tubes that help in proper circulation in the human body
- They run from the heart to all other parts of the body.

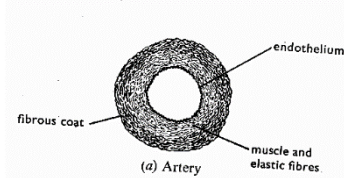
Types of blood vessels.

There are basically three types of blood vessels namely arteries, veins and capillaries.

Arteries.

- Arteries are mainly blood vessels that carry blood away from the heart.
- They have thick walls and narrow blood passage or lumen.
- They lack valves.
- Blood in arteries flow at a high pressure.

The structure of an artery



Note: Most arteries carry oxygenated blood except pulmonary artery.

Veins:

These blood vessels that carry blood towards the heart.

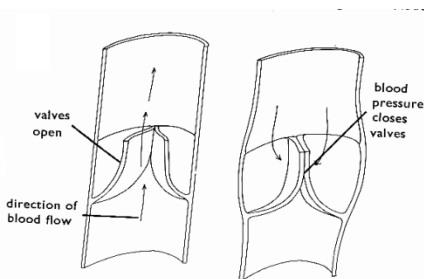
- They have valves, wider lumen and thin walls.
- Valves in veins open in one direction to prevent back ward flow of blood.
- Blood in vein flows at a low pressure.

Capillaries

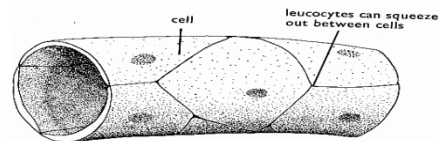
- These are the smallest blood vessels that help to connect the veins to arteries.
- Capillaries help to allow the exchange of blood materials.
- All veins carry deoxygenated blood except the pulmonary vein.
- the pulmonary vein carry oxygenated blood

Structures showing veins and blood capillaries

Vein



Blood capillaries



Note: The aorta is the biggest artery while the vena cava is the biggest vein in the body.

Learners' Activity

- 1) Identify any two blood groups
- 2) Give the functions of the following blood vessels
 - a) Arteries
 - b) Veins
- 3) Give any two structural differences between arteries and veins
- 4) State any one functional difference between arteries and veins

LESSON FIVE; DISEASES OF BLOOD AND HEART DISEASES

Blood diseases

These are disease which commonly attacks the blood components,

- ❖ Malaria, leukemia, anemia, haemophilia, HIV, diabetes and sickle cell anaemia.

Diseases that attack the heart.

These include

- thrombosis
- heart attack
- hypertension

- ❖ **Anaemia** is caused due to lack of iron in one's diet.
- ❖ Iron helps in the formation of haemoglobin which easily combines with the oxygen in the red blood cells.

- ❖ **Sickle cell anaemia** is a condition when one's red blood cells are single celled and therefore unable to carry enough oxygen around the body.
- ❖ **Haemophilia** is condition in which one's blood is unable to clot in case of an injury.
- ❖ **Leukemia** is blood cancer which makes the number of white blood cells abnormally higher.
- ❖ **Malaria** is caused by plasmodia germs spread by female anopheles mosquito.
These commonly attack and destroy the red blood cells.

HEART DISEASES

These are diseases that mainly affect the normal functioning of the heart. They include; coronary thrombosis, hypertension and heart attack.

Coronary thrombosis

This is a disease that affects the heart and is caused due to the blockage of the coronary arteries that supply oxygenated blood and digested food to the heart. It makes the cardiac muscles weak and may stop working due to limited oxygen and digested food supply.

Hypertension

This is a disease of the walls of the arteries making or reducing their lumen. This caused mainly due to smoking of poisonous drugs contained in tobacco. The poisonous drugs damage the cardiac muscles reducing their functioning.

Diabetes

This is caused due to the presence of too much glucose in the body. This disease commonly affects people who feed on a lot of sugary foods and do not do heavy work to burn the glucose in the body.

Learners' Activity

- 1) Write four diseases of the circulatory system
- 2) Identify one vector disease of the circulatory system
- 3) Mention one circulatory disease which affects white blood cells
- 4) Mention one cause of heart diseases
- 5) Suggest one way of improving proper functioning of the circulatory system.

WEEK THREE 15TH JUNE 2020; LESSON ONE : DISEASES OF THE CIRCULATORY SYSTEM

HIV AND AIDS

HIV and AIDS

- ❖ HIV and aids is a disease that affects the circulatory system.
- ❖ **HIV** stands for: **Human Immunodeficiency Virus.**
- ❖ **AIDS** stands for : **Acquired Immune Deficiency Syndrome**
- ❖ This disease attacks one's immune system making the body lack defense to infections.
- ❖ The victim's body becomes weak or unable to defend itself from infections due to the destroyed white blood cells.
- ❖ HIV does not kill the victim, it's the secondary infections untreated that kill the victim.

Ways through which HIV and AIDS is spread.

- ❖ Having unprotected sex with an infected person.
- ❖ Sharing skin piercing objects with an infected person.
- ❖ Through transfusion of unscreened blood.
- ❖ Through some cultural practices such as circumcision.

Effects of AIDS.

- ❖ Having makes one's immunity destroyed resulting into easy attack by infection.
- ❖ AIDS causes death of the victim.
- ❖ A family or community can easily lose an important person in case of death.
- ❖ AIDS has led to orphans and increased number on street children.

Ways of controlling the spread of HIV and AIDS.

- ❖ having protected sex with trusted sex partners
- ❖ avoid sharing skin piercing objects with an infected person
- ❖ Through transfusion using screened blood.
- ❖ Avoid sharing knives during cultural practices such as circumcision/ tattooing.

NOTE:

- AIDS Victims should be given a lot of care by encouraging them to promote personal hygiene, feed well and take their drugs in time.
- Tuberculosis victims are mistaken to be HIV victims due to the same signs and symptoms.

Learners' Activity

1. Write the following in full
i) HIV ii) AIDS
2. Identify the cause of AIDS
3. suggest two ways in which AIDS is spread
4. Why are adolescent girls at a higher risk of getting HIV and AIDS than boys of the same age group
5. Suggest a piece of advice adolescent boys and girls for the prevention of HIV and AIDS
6. List two disorders of the circulatory system.
7. Suggest one way of increasing the volume of blood circulation in the body.

Care of the organs of the circulatory system

- Eating a balanced diet.
- Doing regular physical exercises
- Regular visits to hospital for medical check up
- Avoid eating too fatty/oil food stuffs.
- Avoid rough games.
- Take much care to accidents.

Ways of increasing volume of Blood in Circulation

- Eating a balanced diet.
- Eating foods mainly rich in iron e.g. greens, animal liver and kidneys
- Taking ferrous tablets with advice from a medical worker.

THEME: HUMAN HEALTH

TOPIC: ALCOHOL IN OUR SOCIETY

SUBTOPIC: ALCOHOL

LESSON 2: TYPES OF ALCOHOL

Alcohol:

Alcohol is a chemical substance that makes people drunk once taken in.

Types of alcohol

There are basically two types of alcohol namely;

- Ethyl (ethanol) alcohol.
- Methyl (methanol) alcohol.

Ethyl (alcohol) is the most common type of alcohol found in alcoholic drinks. It's the type of alcohol formed immediately after the ripening of a plant fruit.

Plant fruits ripen due to ethylene hormone.

Methyl alcohol (e.g. methanol) is the most dangerous type of alcohol. It can easily cause blindness in case of contact with the eyes.

Examples of alcoholic drinks include:

'Malwa', 'tonto' and beer.

Reasons why people drink alcohol

People drink alcohol for a number of reasons

- People drink alcohol due to excitement or happiness
- To celebrate their successes
- To forget their problems
- To quench thirst

Learner's activity

1. In one sentence, explain the term alcohol.
2. Identify any two examples of alcoholic drinks
3. Mention the two main types of alcohol.
4. Give any two reasons why people take alcohol

LESSON 3: METHODS OF PRODUCING ALCOHOL.

There are basically two methods of producing alcohol namely;

- Fermentation method.
- Distillation method

Fermentation method.

Fermentation is the process of turning sugar from plant juice and water into alcohol.

This is aided by yeast.

The sugar found in fruit juice is worked upon by yeast to form fermented alcohol.

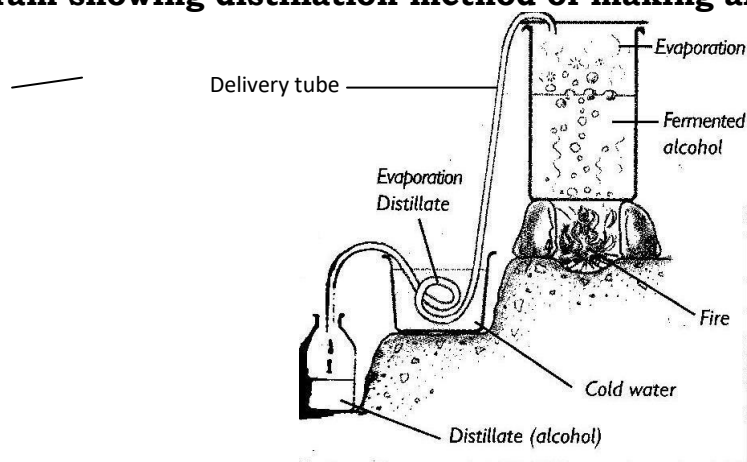
Examples of plant materials used to produce fermented alcohol are;

Ripe banana, cassava flour, maize, millet, sorghum

Distillation method

- This is a process of obtaining pure alcohol from fermented alcohol by boiling evaporating and condensing of the alcohol vapour to form distillate
- Distillation method involves two process namely evaporation and condensation of the vaporized alcohol into a liquid.
- The liquid obtained using this method is called a distillate.
- Examples of alcoholic drinks obtained through this method are waragi, whisky, rum gin, vodka.

Diagram showing distillation method of making alcohol.



- Heat source provides the heat to cause evaporation.
- Cold water helps to condense the vapourised alcohol into a liquid.
- Note: home distillation of alcohol is illegal due to the likely
- Accidents that may occur.

Learner's activity

1. In one sentence, explain each of the following terms;
 - a) fermentation
 - b) distillation
2. State the importance of each of the following during distillation;
 - a) cold water
 - ii) heat source
3. In one sentence, give a reason why home distillation of alcohol is illegal.
4. Give any three examples of plant local materials used to produce fermented alcohol
5. Define the term distillate
6. Why is the delivery tube usually made out of copper?

LESSON4: ALCOHOLICS AND ALCOHOLISM

Uses of alcohol in the society.

- Alcohol is an important drug in the society recommended on most celebrations.
- Alcohol (methyl alcohol) is used by doctors to sterilize medical instruments that cannot be boiled on cleaning.
- Alcohol can be used in some thermometers.
- Alcohol (methylated spirit) can be used to clean the skin before an injection is taken.
- Alcohol is also used as a disinfectant on wounds.
- Alcohol can be used by builders to mix paints and dyes.

Alcoholism

- This is a condition that results from the prolonged use of alcohol.
- It results into the body's addiction to alcohol.
- It also makes the body functioning controlled by the alcohol in take.
- The person who is who is addicted to taking alcohol for his or her normal body functioning is called an alcoholic.

Factors that may lead one to take alcohol

- Stress
- Sad news
- Peer pressure
- Family background or life styles.
- Seductive advertisement.

Learner's activity

1. Explain the following terms;
a) alcoholic b) alcoholism
2. Mention any three factors that may lead to alcoholism
3. State any two ways in which alcohol is important in the society.
4. State how alcohol affects;
i] an individual ii] the family iii]. The community
5. State the law governing the use of alcohol in Uganda.

SUBTOPIC: ALCOHOL AND ALCOHOLISM.

LESSON 5: EFFECTS OF ALCOHOLISM.

Effects of alcoholism.

The habit of taking alcohol causes social and health problems in the society. These effects are caused to; individuals, family or the community.

a) Individuals.

The following are the effects that may result from alcoholism to an individual.

- It causes damages to body organs such as, liver, brain and stomach walls
- Leads to personal neglect .(self neglect)
- Leads to loss of appetite for food resulting into stomach ulcers.
- Leads to poverty since most of the money is spent on buying a alcohol.

b) To the family;

The following are effects that can be caused in case one of the family members is an alcoholic.

- Family poverty.
- Family neglect.
- Loss of family respect.
- Antisocial behavior, child abuse, separation of spouses.
- Causes immorality in children.

c)To the community.

- Alcoholism leads to road accidents by drivers working under the influence of alcohol.
- Alcoholism also leads to increased crime rates in the community.
- Alcoholic officials delay community services since most times they are drunk.

Laws governing alcohol in Uganda.

- Persons below 18yrs of age are not allowed to drunk alcohol in public places.

- All public places dealing in alcohol should be licensed after fulfilling certain standards.
- Drivers are not allowed to drive under the influence of alcohol.
- All forms of home distillations, transportation and possession of alcohol is illegal.

WEEK THREE JUNE
SUBTOPIC: SMOKING
LESSON 1: TYPES OF SMOKING

Smoking

- This is the regular use of tobacco by a person.

Commonly smoked drugs:

- Njaga/ marijuana/ Bhang.
- Opium.
- Cocaine. It is sniffed through the nose.
- Tobacco. This contains Nicotine , tar and carbon monoxide gas.

Ways people use tobacco include;

- Through the burning pipes.
- Through burning cigarettes.
- By sniffing tobacco powder.
- By chewing the leaves of tobacco.

Note; tobacco contains a dangerous gas called carbon monoxide and dangerous chemicals namely Nicotine and Tar.

Types of smoking.

There are two types of smoking namely,

- Active smoking.
- Passive smoking.

Active smoking is the act of inhaling tobacco smoke directly from a burning cigarette.

Passive smoking is the act of inhaling air contaminated by tobacco smoke from an active smoker.

Reasons why people smoke;

People have different reasons why they smoke

- Some smoke to warm their bodies.
- Some smoke due to peer pressure.
- Some smoke to concentrate on their work.
- Some smoke to feel confident.
- Some smoke to look sophisticated/ important.

SUBTOPIC: SMOKING
LESSON 2: EFFECTS OF SMOKING.

Effects of smoking.

- Tobacco smoking is harmful to one's health.
- Tobacco contains poisonous chemicals and a gas.

These are nicotine, tar and carbon monoxide gas.

Disease caused due to smoking.

Diseases that result from smoking affect the respiratory system. they include;

- Lung cancer, emphysema, tuberculosis.
- Tuberculosis, bronchitis and pneumonia are worsened by smoking.

Smoking is also dangerous to pregnant mother in the following ways;

- Causes miscarriage/abortion.
- Causes pre mature birth/ still birth.
- Causes underweight births.

Effects of smoking to the community.

- Smoking can easily result into fire out breaks in an area.
- Smoking causes air pollution.
- It creates bad practices among children in the area.

Effects of smoking to the family.

- All family members become passive smokers.
- Young children copy bad habits from elders who smoke.
- It can also lead to loss of family income since much of the money used for smoking.

How to avoid smoking (Life skills used to safeguard against smoking).

- Keeping busy during free time by involving in football, volleyball, and music to avoid thinking about smoking.
- Avoid joining peer groups of people who use tobacco and other drugs.
- Advise friends who smoke about the dangers of smoking.

Learner's activity

1. Explain the term smoking.
2. Identify the different ways people use tobacco.
3. Differentiate between passive and active smoking.
4. Give any two reasons why people smoke.
5. State two ways in which smoking can be dangerous to pregnant mother and to the family.
6. Outline any two ways of controlling smoking.

SUBTOPIC: DRUGS IN SOCIETY.

LESSON 3: ESSENTIAL DRUGS.

Drugs

A drug is any chemical substance introduced in the body that affects functioning of the body systems.

Drugs can be introduced in the body voluntarily or involuntarily.

Types of drugs

There are basically two types of drugs namely.

- Essential drugs.
- Narcotic drugs.

Narcotic drugs are drugs which cause addiction after a prolonged use or dependency. They are sometimes known as **drugs of dependency**.

Examples of narcotic drugs are,
Tobacco, alcohol, marijuana, opium etc.

Essential drugs.

These are drugs used by people to meet their common health problems.

- ❖ They are categorized into four groups:
 - *Pain killers* – for reducing pain.
 - *Curative drugs* – used to cure diseases.
 - *Preventive drugs* commonly vaccines used to prevent diseases
 - *Contraceptives* –mainly used in family planning.

Qualities/ characteristics of essential drugs.

The following are the attributes of essential drugs:

- ❖ They should be common and affordable.
- ❖ They should have fewer side effects and meet people's health problems.
- ❖ They should have value for money.

Ways drugs are introduced in the body.

- By swallowing (tablets)
- By injections (injectable)
- By drinking (syrups)
- By smearing (ointments)

Learner's activity

1. In one sentence, explain the term drug.
2. Identify the different types of drugs.
3. What are essential drugs?
4. In three sentences, give the qualities of essential drugs.
5. State any two ways in which essential drugs are introduced in the body.

TYPES OF ESSENTIAL DRUGS.

Types of essential drugs:

Essential drugs are grouped into two types according to their characteristics namely;

- ♣ Traditional drugs.
- ♣ Laboratory drugs.
 - Traditional drugs are drugs which have existed before the introduction of science and technology.
 - Traditional drugs can also be modernized in laboratories.

Examples-

- ♣ Blackjack - cures wounds.
- ♣ 'Bombo' grass for cough etc.
- ♣ 'Enkejje' for measles.
- ♣ Mululuuza for fever.

Characteristics of traditional drugs.

- ♣ They are used in their raw form mainly
- ♣ Their side effect on human health is not known.

- ♣ Their purity and quality changes.
- ♣ They are commonly not packed and sealed.

Laboratory manufactured drugs.

These are drugs which are commonly made from the laboratory with both manufactured dates and expiry dates.

Examples include:

Cough mixtures, chloroquine, paracetamol, pilton, ORS for rehydration, capsules etc.

These drugs are commonly found in clinics, hospitals and other health units.

Characteristics of laboratory manufactured drugs

- ℵ They are well packed and scaled to prevent easy contamination.
- ℵ Have expiry dates
- ℵ Are the same for every quantity made they have labels, names and what they cure.
- ℵ Their stability and strengthen are known.
- ℵ They have same purity and quality.

Learner's activity

1. State the difference between traditional drugs and laboratory drugs.
2. Give two examples of traditional drugs.
3. Outline any two characteristics of traditional drugs.
4. List down any three characteristics of laboratory manufactured drugs
5. Give any two examples of laboratory drugs

SUBTOPIC: DRUGS IN SOCIETY

LESSON 4: DRUG PRESCRIPTION

Drugs prescription;

- ✓ This is the written information given by a health worker on how to use a certain drug.
- ✓ Prescription of drugs is based on the age, weight of the patient, sex or gender and duration or length of illness.
- ✓ Prescribed drug consists of: name of the drug, the disease it cures, time of taking the drug, the dosage.

Importance of drug prescription.

- ♣ It prevents people from taking under or over dose.
- ♣ It helps the patient to avoid drug misuse.

Under dosage is when an individual takes less than the recommended quantity of a drug.

Drug misuse is the act of using a drug without or against the recommended prescription. It is the wrong use of a drug.

Dangers of buying drugs from shops or markets.

- Drugs may be harmful or expired.

- Such drugs are not well prescribed and stored.
- Drugs may be contaminated
- They may be spoilt/damaged
- They may be fake drugs.

Learner's activity

1. Explain the following terms;
i] Drug prescription ii] drug misuse
2. Give two reasons why health workers should give drug prescription to their patients.
3. State any two dangers of buying drugs from shops.
4. State any two ways in which people misuse drugs today.

SUBTOPIC: DRUGS IN SOCIETY

LESSON 5: DRUG STORAGE AND DRUG ABUSE.

Drug storage.

- Drugs need to be kept in a clean cool dry place to prevent them from contamination.
- Cold chains are used to keep vaccines where there is no electricity.
- Drugs should also be kept away from children to prevent child poisoning at home.

Dangers of poor storage of drugs.

- Drugs may easily become contaminated and lose its curative value.
- Poorly stored drugs instead become poisonous to one's health.
- Keeping drugs in children's reach can easily cause child poisoning in homes.

Drug abuse;

- Is the use of a drug in a way that is harmful to one's health.
- Drugs abused can be either legal or illegal.

Reasons why people abuse drugs.

- To quench thirst
- To improve performance
- To concentrate on work
- To feel warm
- To celebrate successes.

Effects of drug abuse;

- It can cause health damages to the body organs such as the brain, liver pancreas etc.
- Drugs abuse can cause abnormalities or improper body function.
- Drug abuse can easily result into death. It leads to divorce/spouse/child abuse.

Note;

Drugs of dependency are drugs which cause addiction incase of prolonged use.

Drug dependency is when one's body becomes addicted to a certain drug.

Life skills to safe guard against drug dependency

- Keeping busy with sports and games in free time
- Avoid peer groups which exercise the use of common drugs.
- Engage in good social clubs.
- Never wish to taste any drug any day.

Learner's activity

1. What is drug abuse?
2. Why do people abuse drugs?
3. Give any two effects of drug abuse to an individual.
4. Explain what is meant by the term drug dependency.
5. State any two life skills of safe guarding against drug dependency

END OF TERM ONE WORK.