**African Centre for Project Management,**

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**Course: Post Graduate Diploma in Public Health**

***Course Unit: Module Seven Assignment***

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1. *Define first Aid? Why is it important for a public Health practitioner to have first Aid skills?*

According to Merriam Webster, First Aid is emergency care or treatment given to an ill or injured person before regular medical aid can be obtained.

First aid is **defined as the first immediate temporary care for the ill and injured before a regular medical aid can be obtained in order to preserve life, prevent further worsening of the situation and promote recovery.** In minor cases such as minor injuries first aid is enough a treatment and does not require further medical attentions.

According to WHO, Public Health is defined as “the art and science of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities and individuals (Acheson, 1988; WHO).

CDC however, defined Public Health as the science of protecting and improving the health of people and their communities achieved through promoting healthy lifestyles, researching disease and injury prevention, and detecting and preventing and responding to infectious diseases. Overall, it is concerned with protecting the health of entire populations. Unlike clinical professionals like doctors and nurses who focus primarily on treating individuals after they become sick or injured, public health professionals try to prevent problems from happening or recurring through implementing educational programs, recommending policies, administering services including first aid and conducting research. It is therefore important that public health practitioners are first aiders or vice versa.

First Aid is important for Public Health practitioners in the following ways;

**First aid saves lives**

Basic first aid can mean the difference between life and death. All injuries and emergencies must be treated as fast as possible because the assistance provided during the first few minutes of an accident is essential for the injured especially for their future health and quality of life. For example, if no body applied pressure on a victim of a road traffic accident to stop bleeding until the emergency response team/Ambulance arrived, the victim will be found dead by the time the ambulance arrives. A Red Cross survey showed a staggering 59% of deaths from injuries would have been preventable had first aid been given before the emergency services arrived. According to Red cross (2010), the average time before the arrival of the ambulance service in 12 countries in the Middle East and North African region varied widely between the capital and the rural areas with capital cities average time of 14.5 minutes and was difficult to estimate in the rural areas. Public health professionals with the knowledge of first aid can therefore be of help in saving life as the emergency service arrives.

**First aid reduces recovery time**

First aid can have a huge impact on someone’s chances of recovery and can mean the difference between them having a short term or more permanent disability. For example, first aid helps prevent infections through cleaning and dressing open wounds which could lead to sepsis if not covered. Infected wounds such as open fractures can lead to amputation a lifelong deformity that can affect the quality of life. As a public health practitioner, it is the duty to promote healthy and quality life for the population. Assuming the person involved in an accident and amputated is a bread winner for his family, this means the whole family will have a poor health standard given the fact that socioeconomic standards is a key determinant of health.

**First aid increases awareness and reduces the susceptibility to accidents**

As is the responsibility and function of a public health professional to educate the public, learning first aid and becoming alert to potential hazards and medical issues increases the health awareness of the public/ community and allows them to take better care of themselves and their friends and families resulting to resilient communities that relieves pressure on the health system of the government. Public health professionals therefore need to have the first aid knowledge to be able to create awareness to the community.

**First aid reduces hospital time**

Early intervention with first aid can reduce the length of time the patient needs to stay in hospital.

The more time spent in hospital means reduced productivity and hence poor health. For a public health professional, it is important to have the first aid knowledge in order to reduce the time of stay in a hospital for a more productive life hence a better population health as the number of dependencies is reduced. For example, when one is involved in an accident such as in a game or exercising, the faster the first aid given the better. Someone with a sprain can immediately be relieved after first aid is offered and be able to go on with his or her usual activities or may spend just a shorter time in the hospital. Also reduced time of stay in the hospital means reduced waste of resources which could have been used on some others.

**First Aid is crucial in the communication for the emergency services**

Staying with the patient until the emergency services arrive to take over means you can convey vital information about how the patient sustained the injury or information about their condition. As the casualty may be unconscious, it is the first aider who will provide the information on how it has happened. This information is vital to the emergency services for the effective treatment of the patient and can also aid the patient’s treatment and recovery. Communication especially patient centered communication is key in recovery, and as a public health professional it is important to have the knowledge of first aid through which a patient centered communication is done in the provision of the first aid. The public health professional in such can be able to educate the patient or casualty if conscious on how he or she can prevent him/herself from such accidents. The role of public health is to prevent the population from diseases or injuries through educating the communities. It is therefore important the public health professionals have first aid knowledge to be able to educate the casualty and the public on prevention as well as pass on information to the emergency medical service on arrival to the scene.

**First aid empowers the community**

For a public health project to be successful, it is important to empower the community and make the community to take ownership of the project. First aid knowledge empowers all those trained to provide first aid. When a public health professional has the knowledge of first aid, he or she feels empowered and as he performs first aid on casualty and so does a community which has been trained by the public health professionals on how to perform first aid.

**First aid prepares one for emergency/anything**

First aid knowledge prepares a public health professional for anything or for an emergency that is bound to happen anytime. During emergencies of outbreaks and natural disasters, it is usually the public health professionals to first respond and with the knowledge of first aid, they are ready at any time to handle any situation.

None of us know what the future has in store for us or for our loved ones as illness such as heart attack, stroke, severe bleeding and breathing difficulties can occur suddenly at any time requiring immediate attention. First aid will equip the public health professionals with knowledge to be able to handle situations such as these alleviating suffering and worsening of the condition a key function of public health.

**First aid prevents medical situations deteriorating**

First aid can prevent a bad situation from getting worse. For example, a patient who is bleeding from a deep cut could suffer severe blood loss that can be fatal without intervention. Applying pressure using the first aid techniques prevents the otherwise fatal medical emergency from rapidly deteriorating and stabilize the patient until further medical help arrives. This is important for a public health officer to be able to promote recovery and health.

**First aid encourages healthy and safe living.**

It is the responsibility of a public health professional to train the public on how they can identify potential dangers in their surroundings. Environmental hazards such as not using seat belts and building of homes in areas prone to floods and earthquakes are potential causes of emergencies. The public health professionals therefore need the knowledge of first aid to be able to train the public on how to identify potential hazards in their surroundings because, a trained person is better able to assess their surroundings. Knowledge of first aid promotes the sense of safety and wellbeing amongst people. Having an awareness and desire to be accident free keeps you safer and reduces the number of causalities and accidents.

1. *Explain in detail, the four responsibilities of a first aider*

First aid is **defined as the first immediate temporary care for the ill and injured before a regular medical aid can be obtained in order to preserve life, prevent further worsening of the situation and promote recovery.** A first aider is a person who performs first aid. The four responsibilities of a first aider are as follows,

### **To Preserve life**

The emergency first aid procedures performed are aimed at preserving life. The primary functions of a body are airway, breathing, circulation and bleeding control. This involves opening the airways, ensuring breathing, ensuring blood circulation and stopping bleeding.

In first aid, to preserve life we must follow the ABCD as below;

***Airway***

Blockage of the airways means there is no air passage through the air way depriving the lungs of oxygen which can lead to the collapse of the lungs causing death. In first aid, to preserve life, it is important to make sure the airway is clear. Choking, which results from the obstruction of airways, can be fatal. Therefore, when we remove the choking object, we have cleared the airway hence preserving life during the first step of first aid.

***Breathing***

Normal breathing is essential to maintaining life. After the first step in first aid of clearing the airway, it is obvious to see that the casualty breaths as air can now move freely from outside into the lungs, however, when the casualty is not breathing, it can be fatal. This means that we need to check breathing as our second step to preserve life. If the casualty is not breathing, it is necessary to provide a rescue breathing to preserve life because there is no life without breathing. Victims or casualties who gasp or breath abnormally and are unresponsive require the rescue breath either through mouth to mouth or mouth to nose or a resuscitation (CPR) while observing universal precautions.

***Circulation***

Blood circulation helps in supply of oxygenated blood to the vital organs and the rest of the body while at the same time removing the waste products of respiration from those organs which can be fatal if not removed for excretion. For a first aider to be able to preserve life, he or she so see into it that the casualty’s circulation is working normally. If the casualty is not breathing, the first aider should go straight for chest compressions and rescue breathing which promote circulation while in the emergencies that are not life-threatening, the first aider needs to check the pulse to ensure that blood is circulating. Therefore, by the first aider performing cardiopulmonary resuscitation followed by a rescue breath, normal circulation will be gained hence preserving life.

***Deadly bleeding or defibrillation***

Bleeding is when blood leaves the body majorly through injuries such as cuts and burns. When blood is lost, the body mechanisms are compromised. There will be reduced or no supply of nutrients and oxygen to the vital organs which can lead to death and increased accumulation of waste byproducts in these vital organs which can lead to suffocation of these organs leading to loss of life. Bleeding also leads to hypothermia. Ensuring minimal blood is lost during emergencies such as road traffic accidents will preserve life through applying pressure to cuts and dressing wounds.

### **Prevent deterioration of condition**

The reality is that, it’s not always possible to fix a casualty’s problems caused by a sudden illness or accident. The focus should be on making sure the casualty does not deteriorate whilst waiting for the arrival of the emergency services (Bill C, 2017) as the second aim of first aid. For example, asking a casualty with a broken limb to stay still and padding around the injury will prevent the fracture from moving and causing further injury or pain.

Focus on prioritizing the worst injuries - even if this means leaving one casualty so you can help another by ranking non-breathing as highest priority, major bleeding as second priority, and fractures last in the case of multiple casualties.

Making the area as safe as possible and removing any dangers is also a way of ensuring the condition does not deteriorate. Either remove any danger form the casualty or remove the casualty from the danger. For example, in a road traffic accident where the casualty is in the middle of the road, remove the casualty from the middle of the road and put him or her aside to prevent another car from causing more harm to the casualty and when the casualty is lying on an iron bar or a piece of glass, safely remove the piece of iron or glass from the casualty from harming the casualty more.

Calling for emergency medical service as quick as possible to allow a shorter time for the arrival of the emergency medical service that will help in preventing the casualty’s condition from deteriorating.

### **Promote recovery**

Promoting recovery by arranging for a prompt emergency medical help such as calling for an ambulance is a step towards promoting recovery. The faster the medical service is received the easier the recovery.

Other examples in the promotion of recovery include the choking maneuvers, recovery position, CPR and direct pressure on wounds.

If the individual is breathing but is unconscious, there is still a significant risk of airway obstruction and putting the casualty in the recovery position reduces the risk to the patient thence promoting recovery. This will allow easy flow of fluids such as vomitus freely without blocking the airway.

Cardiopulmonary resuscitation and rescue breath where 30 CPR followed by 2 rescue breaths is performed on a person who is not breathing in order to regain breath. Once breathing is regained then recovery is promoted.

However, according to Adam Felman, in 2008, the European Resuscitation Council and the American Heart Association (AHA) reversed their policy on the effectiveness of only using chest compressions and advised that they can be used without artificial respiration on adults who collapse in cardiac arrest.

It is unlikely that CPR will start a heart. Its purpose is to maintain the flow of oxygenated blood to the brain and heart, preventing or at least delaying tissue death. CPR can extend the brief window of time during which successful resuscitation can take place without permanent brain damage.

The new guidelines by the International Liaison Committee on Resuscitation (ILCOR) (2005) stated that rescuers should progress straight to CPR if there is no breathing, rather than checking for a pulse. They also added that rescue breathing must not be performed without chest compression.

Another way through which the first aider can promote recovery include elevation of injured extremity such as the leg or arm to prevent bleeding.

### **Protect the casualty and others**

When one offers first aid to a casualty, one is supposed to protect the casualty from another harm. Removing the casualty from another potential danger such as from the middle of the road to the sides is a way of protecting the casualty from another danger.

After ensuring the casualty is safe and placed in a safe place, it is the responsibility of the first aider to stay with the casualty until the called emergency service response arrives. This will protect the casualty from other dangers such as wild animals in case of an accident that occurred in the middle of a forest along a high way through the forest.

The first aider is also supposed to protect the casualty by covering to maintain warmth in case of bleeding which can lead to hypothermia.

Protecting bystanders and by passers from harm is also another way of protecting others from harm or danger which can cause again another disaster or casualty when the on lookers also become casualty themselves it means the casualty number will go up and situation will deteriorate.

1. *Explain the universal precautions expected of one before engaging in any rescue mission as a first aider*

The universal precautions of first aid are steps taken to prevent or minimize cross infection or exposure to pathogens. Specific pathogens/microorganisms transmitted in human blood or bodily fluids, which can cause disease in people, is referred to as blood-borne pathogens (BBP).  There are three major BBPs: Hepatitis B (HBV), Hepatitis C (HCV), and Human Immunodeficiency Virus (HIV).

The “Universal Precaution Rule” is to treat all human blood, bodily fluids and other potentially infectious materials as if they are infectious.  It should always be assumed that all bodily fluids have the potential to transmit disease.

Unbroken skin is a good barrier against BBPs, however, the smallest skin opening including open sores, cuts, abrasions, acne, sunburn and blisters can contract infectious materials.

Wearing of appropriate personal protective equipment (PPE) such as disposal hand gloves, CPR face shield, CPR pocket mask, eye glasses, face masks and gowns places a barrier between the first aider and the potentially infectious material of the casualty or verse versa.

The universal precautions are meant to protect both the first aider and the casualty from cross infection, and they include;

**Treating all casualties/ patients as if infectious**

It is always good to assume that all human beings are potentially infectious. This will raise awareness of being careful in handling each individual case. There are so many cases of infectious diseases such as the hepatitis B and C and HIV/AIDS. It is therefore necessary to treat all patients as infectious prompting the precaution of wearing PPEs.

**Wearing appropriate protective equipment**

Wearing of personal protective equipment such as gloves, face shields, masks, eye glasses and gowns function as a barrier to potentially infectious materials. This will protect the first aid provider from getting in contact with the potentially infectious materials.

In the case of multiple casualties, it is important to wear new protectives such as cloves and CPR masks for each and every patient in order not to contaminate the next casualty. Care should be taken when putting on and removing the PPE to ensure contaminated PPE does not touch a bare body surface. A torn protective such as gloves and gowns should never be used because it loses its ability of acting as a barrier.

**Maintaining good hygiene practices before, during and after the first aid task.**

Good hygiene is necessary before, during and after first aid. It is always good to minimize cross infection from one patient to another in a multiple casualty of from the first aid provider and the patient or vice versa. Using new disposal gloves for each patient is vital in preventing cross infection from the first patient to the next. All used disposable PPEs should all be disposed off safely into a waste bin with a red lining marked as infectious waste to prevent it from encountering any other person.

The use of sterile dressing pads in case of an injury is very vital in maintaining hygiene during first aid.

In the event of an outbreak of an infectious disease, it is necessary to isolate the patient to prevent cross infection. Isolation is a sure way of hygiene practice in the prevention of cross infection.

Disinfecting all contaminated materials and surfaces is also very important hygiene to prevent infection from contaminated material and surfaces.

**Appropriate disinfection and disposal of all materials including protectives and sharps safely**

Special precautions must be observed when disposing of biological waste and materials contaminated with biological waste (Hal T, 2009).

After the first aid is done, the personal protectives such as disposal gloves, face masks, gowns and the mouth seals should be removed carefully and disposed off in a waste container labeled infectious medical wastes with red label. This will prevent other people from coming into contact with the contaminated PPEs that are assumed infectious.

**Hand washing after completion of the first aid tasks**

Wash hands with clean water and soap after the first aid task is done. This will eliminate other infectious bacteria that might have been left on the hands before taking notes of the situation. Unwashed hands will transfer infectious material onto the book and pen for registering or writing the notes of the incident. Hand washing is very vital in the universal precaution of first aid.

1. *As a public Health practitioner, explain how you can execute a cardiopulmonary resuscitation first aid experience*

Cardiopulmonary Resuscitation is a repetitive cycle of airway opening, chest compressions and rescue breathing in order to artificially circulate blood that will provide oxygen that the blood delivers to vital organs such as the brain and all other parts of the body keeping the heart and the brain oxygenated until a specialized emergency medical help arrives.

If a person is not breathing, his heartbeat will stop necessitating CPR to help circulation and get oxygen into the body.

To perform CPR, it is necessary to first, open a person’s airway to check if they are breathing. This is done to rule out whether or not the CPR can be performed on the patient/casualty. It is only unresponsiveness and absence of normal breath that calls for the need for CPR. Casualties who are not breathing normally or unresponsive and breathing inadequately will need CPR.

To perform CPR, the following are the steps,

Firstly, identify the need for CPR by looking for unresponsive patients with inadequate breathing or absence of breathing. No CPR should be done to a responsive patient with normal breathing.

With the patient lying on his/her back on a firm surface, kneel besides him and place the heel of your hand on the center of the chest of the patient.

**While k**eeping the arms straight, cover the first hand with the heel of the other hand and interlock the fingers of both hands together with the fingers raised so they don’t touch the patient’s chest or rib cage.

Then lean forward so that the shoulders are directly over the patient’s chest and press down on the chest about two inches. Release the pressure, but not your hands, to release the chest back up. This pressing of the chest is done repeatedly 30 times at a rate of 100 compressions per minute before giving a rescue breath.

To open the airway, move to the patient’s head and tilt the head and lift the chin to open the airway again allowing the mouth to fall open. This will allow the air generated by the compressions to come out uninterrupted or unblocked.

After the 30 chest compressions, give a rescue breath by pinching the nostrils closed with the hand that was on the forehead and support the patient’s chin with your other hand. Take a normal breath, put your mouth over the patient’s, by using a CPR mouth mask and blow until the chest rises. Remove your moth from the patient’s and allow the chest to fall. Repeat the rescue breath and monitor the chest rise and fall. This means that for every 30 chest compressions, give 2 rescue breaths and then repeat the chest compression until the patient regains breathing normally.

The 30 compressions and the 2 rescue breaths are repeated for at least two minutes while waiting for the emergency medical service. A call to the emergence service center should be dine even before the procedure is started and if there is another person in the scene that can be sent it is necessary to send the person to call for the ambulatory services and give back a feedback about the response from the emergency service.

1. *Explain briefly the first aid process in the following processe*
2. *An open fracture*

A crack or a break in a bone is called a fracture. An open fracture, also called a compound fracture, is a fracture in which there is an open wound or break in the skin near the site of the broken bone. Most often, this wound is caused by a fragment of bone breaking through the skin at the moment of the injury. They are mostly caused by some type of high-energy event—such as a gunshot or motor vehicle accident.

* Open fractures require expert emergency medical help. It is very important to call for assistance as quick as possible. The longer the time for the expert emergency to arrive means a deterioration in the condition. Call for medical help.
* The next step is to curry out primary assessment of the patient to see the DRS ABCD, that is check for danger to be sure that there is no danger to you and the patient, if the patient is responsive or not, send for help or call for a help if need be, check for the airway and clear if blocked, check for breathing if the patient is breathing or not and perform CPR when necessary, check for circulation and deadly bleeding so as to stop for the bleeding.
* After checking for bleeding which is eminent in this case of an open fracture, it is necessary to control bleeding by applying continuous pressure above the fracture site. Use of a tourniquet or a piece of cloth will help.
* Immobilize the injured part such as a limb or the arm and stabilize the injured area in position using any available materials such as pillows, trousers or Splint if necessary and minimize movement after immobilization.
* Cover the open wound with dry sterile dressing and a bandage to hold it on to the site. This will prevent the situation from deteriorating by preventing contamination of the wound with foreign particles including bacteria.
* Check the circulation below the fracture after applying the pressure above the fracture to be sure the lower part is not cut off oxygen and nutrients.
* Carry out secondary assessment which is a through head to toe check to identify any significant injuries. It could be that the patient has another simple fracture which could not be detected before. This will allow the first aider to identify and respond to that other injury promptly.
* Monitor and treat for shock if present. If the person feels faint or is breathing in short, rapid breaths, lay the person down with the head slightly lower than the trunk and, if possible, elevate the legs.
* Rest and reassure the casualty while waiting for the medical help. The first aider is not supposed to leave the casualty alone till when the emergency response team arrives and he or she hands over the casualty to the emergency team. Keeping with the casualty means protecting the casualty.

1. *A closed fracture*

A crack or a break in a bone is called a fracture. A closed fracture also known as a simple fracture is one in which the skin remains intact with no penetration or protrusion of a bone.

* Just like open fractures, closed or simple fractures also require expert emergency medical help. It is very important to call for assistance as quick as possible. The longer the time for the expert emergency to arrive means a deterioration in the condition. Call for medical help.
* The next step is to curry out primary assessment of the patient to see the DRS ABCD, that is check for danger to be sure that there is no danger to you and the patient, if the patient is responsive or not, send for help or call for a help if need be, check for the airway and clear if blocked, check for breathing if the patient is breathing or not and perform CPR when necessary, check for circulation and deadly bleeding so as to stop for the bleeding.
* After checking for bleeding which in the case of a closed fracture could be due to other injuries and not at the site of the fracture, it is necessary to control the bleeding by applying continuous pressure at the site of bleeding to stop it.
* Ice the area to reduce on pain and swelling. This is done only for closed fractures also known as simple fractures.
* Immobilize the injured part such as a limb or the arm and stabilize the injured area in position using any available materials such as pillows, trousers or Splint if necessary and minimize movement after immobilization.
* Check the circulation below the fracture after applying the pressure above the fracture to be sure the lower part is not cut off oxygen and nutrients.
* Carry out secondary assessment which is a through head to toe check to identify any significant injuries. It could be that the patient has another simple fracture which could not be detected before. This will allow the first aider to identify and respond to that other injury promptly.
* Monitor and treat for shock if present. If the person feels faint or is breathing in short, rapid breaths, lay the person down with the head slightly lower than the trunk and, if possible, elevate the legs.
* Rest and reassure the casualty while waiting for the medical help. The first aider is not supposed to leave the casualty alone till when the emergency response team arrives and he or she hands over the casualty to the emergency team. Keeping with the casualty means protecting the casualty.

1. *Poisoning by ingestion*

A poison is a substance that is capable of causing the illness or death of a living organism when introduced or absorbed. Examples include pesticides, weed killers, prescribed medicines when wrongly taken, cleaners such as chlorinated cleaning solutions, fumes rich in carbon monoxides, thinner based solvents and methylated alcohols.

They are either inhaled, ingested or introduced through injections into our body. And being poisonous, just like the infectious diseases, it is always important to prevent cross poisoning. It is therefore necessary to take all precautions for safety as rescuing a poisoned casualty poses high risks to the first aider.

The following are the steps involved in management of poisoning by ingestion;

* Check out for danger. Assess the environment and see any possible danger such as vaporous poisons by looking around while keeping in one position.
* Call for immediate emergency expert help such as from a poison control center if any or any poison expert to come as quick as possible for rescue.
* The third step will be to carry out primary assessment looking at danger as above, check the patient to see the DRS ABCD, that is check for danger to be sure that there is no danger to you and the patient, if the patient is responsive or not, send for help or call for a help if need be, check for the airway and clear if blocked, check for breathing if the patient is breathing or not and perform CPR when necessary, check for circulation and deadly bleeding so as to stop for the bleeding. Remove all remaining substance in the mouth keeping safe from touching any substance by hand and making sure it doesn’t get in touch with one’s mucous membranes such as mouth and eyes.
* Place the patient in a side position if unresponsive but breathing normally and ensure proper ventilation. Do not administer CPR.
* Examine the environment and ask people around about what was taken and make an urgent call to emergency specialists while keeping any container found to be looking a potential source of the poison in the scene of the incident.
* Carry out secondary assessment which is a through head to toe check to identify any significant injuries while taking caution not to get contaminated by the poison. It could be that the patient has another simple injury as a result of fall or may be resulting from the poison itself which could not be detected before. This will allow the first aider to identify and respond to that other injury promptly thence preventing the situation from worsening.
* If it is a corrosive substance give water or milk to neutralize the poison otherwise do not induce vomiting which could worsen the situation unless instructed by the special poison control center if any. If it is a household cleaning substance suspected to have caused or any other chemical including drugs, read the instruction for first aid in case of accidental poisoning and follow the steps.
* Rest and reassure the casualty. Do not leave the scene until the emergency rescue arrives and you hand over the casualty to the emergency team reporting all the information and items gathered. Evacuate the casualty if is a priority to the nearest poison control center.

1. *Unconscious victim*

Unconsciousness is when a person is unable to respond to people and activities. It is also known by doctors as a coma or being in a comatose state and caused by nearly any major illness or injury as well as substance (drug) and alcohol abuse and chocking on objects.

Unconsciousness is an abnormal state in which a person is not alert and not fully responsive to his/her surroundings. Levels of unconsciousness range from drowsiness to collapse and may range in severity from fainting to coma.

The following are the steps in providing first aid to an unconscious patient;

* Determine what caused the loss of consciousness by checking if the patient or casualty is wearing a medical alert tag showing a known chronic disease the patient has.
* On knowing the cause of the unconsciousness, call emergency medical services and give first aid for that illness or injury until they arrive.
* If the cause is not determined, call emergency medical services and give first aid for that illness or injury until they arrive by performing the primary assessment (DRS ABCD).
* Being an unconscious patient, you need to determine danger. Make sure there is no danger to you and the casualty and determine the level of responsiveness.
* Call for the emergency service and continue to check the airways and ensure is clear by performing a finger sweep.
* Determine if is breathing or not by looking for upper abdomen movement, listening to air escape from the nose and mouth and feeling the breath by the side of your face. If not breathing, do CPR.
* Perform 30 chest compressions at the rate of 100 compressions per minutes and 2 rescue breath while maintaining an open airway by performing the head tilt and chin lift procedure.
* Do not give an unconscious person anything by mouth even if he/she regains consciousness until recommended by a physician.
* Do not attempt to wake an unconscious person by slapping or shaking him/her or by putting cold water on the person. Just allow the patient to wake up alone.
* Do not put a pillow under the head of an unconscious person, as this could block his/her airway.
* Monitor if the patient response to the CPR by checking the chest movement and feeling the breath. If the patient starts to breath, put in a recovery position and stay with the patient and reassure the patient.

1. *Spinal injury*

The spinal cord contains the nerves that carry messages between the brain and the rest of the body. It passes through the neck and back known as the vertebrae column.

Spinal injury is damage to any part of the spinal cord or nerves at the end of the spinal canal often causing permanent changes in strength, sensation and other body functions below the site of the injury. It is a very serious injury because it can cause loss of movement (paralysis) and sensation below the site of the injury.

A spinal cord injury may be caused by incidents such as; a bullet or a stab wound, fracture of the spine, traumatic injury to the face, neck, head, chest, or back such as in a car accident, diving accident, electric shock, extreme twisting of the middle of the body during physical activity and games, sports injury and falls from sicknesses such as epilepsy.

Spinal cord injuries of any kind may result in one or more of the following signs and symptoms such as Loss of movement, Loss or altered sensation, including the ability to feel heat, cold and touch, Loss of bowel or bladder control, exaggerated reflex activities or spasms, changes in sexual function, sexual sensitivity and fertility, pain or an intense stinging sensation caused by damage to the nerve fibers in your spinal cord and difficulty breathing, coughing or clearing secretions from your lungs. Any injury that happens to the neck or the vertebrae column that affects the spinal cord is a spinal injury.

During first aid session to a spinal cord injury patient, the following are the steps to follow;

* Do not move the injured person. Moving the person may cause permanent paralysis and other serious complications.
* Carry out primary assessment of the person (DRS ABCD)
* Call for specialized emergency help or any local emergency medical assistance for immediate medical attention.
* Keep the person still supporting with heavy towels on both sides of at the place of injury such as the neck or hold the head and neck to prevent them from moving until emergency care arrives.
* If the casualty must be moved due to reasons such as the casualty vomiting, chocking or in danger of further injury, care must be taken and call for an assistance from a second person to help in moving the casualty by rolling on to one side together while keeping the patient’s head, neck and back aligned.
* Provide basic first aid, such as stopping any bleeding and making the person comfortable, without moving the head or neck.

1. *As a first aider, how will you manage the following conditions*
2. *Asthma*

Asthma is a chronic disease that involves the airways that carry air in and out of the lungs characterized by recurrent attacks of breathlessness and wheezing, which vary in severity and frequency from person to person. Breathlessness or difficulty in breathing is usually the first sign of an asthmatic attack caused by inflammation in the airways that then stimulates a tightening of the surrounding muscles. When this occurs, a person can experience coughing spells, wheezing, a tightening of the chest, or an inability to move air out of the chest.

Asthma symptoms may include wheezing, coughing, chest tightness and trouble breathing–especially early in the morning or at night. In a severe asthma attack, the airways close so much that other vital organs in the body do not get enough oxygen.

To manage Asthma during the first aid phase of treatment, the following is done;

* **Call for emergency medical service.**
* **Carry out primary assessment (DRS ABCD).**
* **Keep calm and r**eassure the person and tell them what you want to do for him or her. People who are panicked can have difficulty breathing, so you don’t want to worsen an already stressful event by seeming panicked yourself, he explains.
* **Help them sit upright learning forward and offer a support to this position.** This allows his or her breathing to be unobstructed.
* **Eliminate the trigger by getting the casualty away from the trigger should you know it or remove the triggering agent such as fumes and smokes.**
* **Check if the casualty has an emergency medical plan and follow the emergency plan available. T**his may include rescue inhalers (albuterol, in most cases), bronchodilators, and other anti-inflammatory agents. If found read the label to determine the appropriate doses of medication and administer the rescue drug. Also check for what needs to be done after the rescue medication.
* **Carry out secondary assessment to see the severity of the attack.**
* **If casualty is unresponsive, and not breathing, perform DRS ABCD to ensure the airway is clear and perform CPR to see that breathing is regained.**
* Encourage the person to call his or her doctor to discuss additional treatments or changes to the current treatment if any.
* Call for an Ambulance if there is no improvement and the medical plan isn’t working well as you have tried your best.
* Stay with the patient or casualty and reassure him or her until emergency medical help arrives and hand over the patient to the emergency team and make a follow up later to see if any improvements.

1. *Stroke*

Stroke is the sudden death of brain cells due to lack of oxygen, caused by blockage of blood flow or rupture of an artery to the brain. Sudden loss of speech, weakness, or paralysis of one side of the body can be symptoms. A suspected stroke may be confirmed by scanning the brain with special X-ray tests, such as CT scans.

Initial symptoms of a stroke can occur in someone suddenly. Know these signs of a stroke include difficulty speaking, difficulty understanding or confusion, especially with simple tasks, difficulty with muscle strength, especially on one side of the body, difficulty with numbness, especially on one side of the body, severe headache, vision changes in one or both eyes, difficulty with swallowing and facial droop on one side.

The F.A.S.T. test which was designed in 1998 to help ambulance staff in the United Kingdom quickly assess stroke and this is commonly used during first aid. To determine a condition is stroke perform FAST;

* F means face. It checks if one side of the face droops which is a sign of a possible stroke.
* A means arms and it checks if the person cannot hold both arms out, it’s another possible stroke sign. Does one arm drift down when both at equal position?
* S means speech. Are there slurring words coming from the casualty and does the patient understand simple sentences easily or poorly?
* T means time. This means that after testing the three first signs of stroke as positive, call timely the emergency response.

The first aid management of stroke is as follow,

* If the casualty or patient is responsive, carry out primary assessment, (DRS ABCD)
* Call for emergency medical help
* Lay the casualty down with the head raised
* Loosen any tight wearables including clothing and jewelries such as watches and necklaces to allow free circulation.
* Stay with the casualty until the emergency medical help arrives while reassuring the patient.
* Get history of the patient by asking some questions.
* Whereas, for unresponsive patient, the first steps of primary assessment and calling the emergency medical service, the next step for this unresponsive patient and breathing is put in a stable side position (recovery position).
* Loosen also tight clothing and jewelries
* After ensuring there is no danger, air way is clear, call for emergency help is done, breathing is checked, circulation is checked and deadly bleeding controlled, perform CPR.
* Avoid the use of aspirin during stroke as this may worsen the situation should the cause of the stroke be bleeding in the brain.

1. *Heart Attack*

## A heart attack also known as myocardial infarction is a serious medical emergency that occurs when there is a sudden blockage of blood supply to the heart usually as a result of a blood clot that occurs at the eroded surfaces of walls of arteries. This will stop the cardiac muscles from getting oxygen leading to its death (heart attack) unless oxygen delivery is restored. Signs and symptoms include; sweating, chest pain, Nausea, shortness of breath and sense of impending doom.

Management of heart attack is meant to restore supply of oxygen to the cardiac muscles and the following are the steps involved in the first aid management of heart attack;

* Perform the primary assessment (DRS ABCD). Looking for danger and removing it, responsiveness, send for help or call for a help, check airway and clear, check for breathing, check for blood circulation and deadly bleeding.
* Call for emergency specialized medical help.
* If the casualty is unresponsive and breathing, place him/her in a stable side position.
* Stop movement and any other activity.
* If conscious place the casualty in a sitting position.
* Check to see if the casualty has medication and help to give the medication usually 300 mg of Aspirin to thin the blood.
* Follow their medical plan for heart attack if any.
* Loosen all tight wearables such as clothing and jewelries to allow free circulation.
* If the patient becomes unconscious, perform DRS ABCD and CPR to initiate circulation
* Carry out secondary assessment
* Stay with the patient and reassure him or her till the emergency medical service arrives.

1. *Is there need for continued research in Public Health? Support your answer with appropriate examples*

## Research is the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions.

## According to the Institute of Medicine, (IOM, 2009), under both the Health Insurance Portability and Accountability Act (HIPAA) privacy Rule and the common, research is defined as “a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.” This is a broad definition that may include biomedical research, epidemiological studies (AMS, 2006) and health services research (Baily MA, 2008).

Yes. There is need for continued research in public health because research provides so much to the public health as the knowledge and tools available are not always adequate to tackle existing health problems which is constant and never ending necessitating the need to generate new information and develop improved and more effective ways and tools of protecting and promoting health and reducing diseases as well as improving on health determinants.

The need for continued research in public health is indeed necessary and important as follows;

Research is essential to find out which treatments work better for patients. Considering the emerging microbial resistance in diseases such as Tuberculosis and malaria, there is need to do more research to find out which treatment will be of help to these drug resistant strains. This allows for development of new drugs to effectively work on the resistant strains of pathogens.

It plays an important role in discovering new treatments. HIV/AIDS being one of the biggest pandemics in the world has till now no cure. According to UNAIDS, the number of People with HIV. There were approximately 37.9 million people across the globe with HIV/AIDS in 2018. Of these, 36.2 million were adults and 1.7 million were children (<15 years old) and an estimated 1.7 million individuals worldwide became newly infected with HIV in 2018 (UNAIDS, 2019). The need for more research to develop HIV/AIDS treatment is therefore vital.

Continued research is necessary in making sure that we use existing knowledge and treatments in the best possible ways. Research improves the knowledge about local contexts of a disease or health outcome, conditions and health priorities. For example, the infectious diseases such as malaria have been concentrated in the developing countries unlike in the developed countries. Research is necessary to identify the need and gap in places to be able to prioritize on what needs an urgent attention in a specific place. In the developed world, they are shifting their focus to chronic diseases while in Africa and other developing countries both chronic and infectious diseases are taking over. The need to research and identify priorities in each setting is vital.

With the rapidly growing market globally and the global market competition in the manufacturing industry especially for drug manufacturing, continued research will develop us to mark out the thin line between truth and lie. Drugs produced are usually over advertised with a lot of lies. Research will make us rule out lies from the truth hence saving life, health and economy.

Research can find answers to things that are unknown. For example, there still exist some conditions that have not been able to find effective treatments such as dengue fever and HIV/AIDS. Continued research will give answers to the unknown by finding effective treatments for such diseases. Another example is the current epidemic in DRC, the Ebola outbreak which through research people have been able to come up with the trial vaccine which have been able to give protection to people vaccinated and with continued research hopefully an effective vaccine will be found and a treatment able to cure the disease.

Continued research is important in filling gaps in knowledge such as the need to understand or gain knowledge about social, political, economic and environmental determinants of health. This is important in understanding these determinants in regard to attaining health equity. Despite the countries and their donor support try to provide services to their citizens, there has never been equity in service delivery. It is therefore necessary to continue conducting research to have an insight understanding of this to have health equity.

Health policy and system research helps in changing the way that healthcare professionals work for a better health outcome. Research on patient centered treatment allows for the development of patient specific treatment plans which are better for patient specific treatments that results to better health outcomes. This will ensure better health systems.

The world was taken up by storm when the first Ebola outbreak occurred. In every situation and in every emergency, it is important to prepare. Research is therefore necessary for preparedness of new emergencies such as infectious disease outbreak because we do not know what tomorrow brings in terms of infectious outbreaks.

Continued research is necessary to bridge the 10/90 gap. Pneumonia, diarrheal diseases, tuberculosis and malaria when combined have been estimated to account for more than 20% of the disease burden in the world with most of it in developing countries, yet they receive less than 1% of the total public and private funds which are devoted to health research (Delisle et al, 2005). Only 10% of worlds expenditure on health research and development is spent on health conditions that represent 90% of the global disease burden (Delisle et al, 2005) creating a vast inequity between drug research and development and neglected diseases which demands the bolstering of research capacities in developing countries through international and national collaboration. Continued research will help bridge this gap of health inequality which will help in development of new drugs and vaccines that are direly needed.

Looking at the current burden of diseases and the far the world has been able to prevent other diseases such as polio through vaccination, there is still a lot that we need to do as public health professionals to manage the ever emerging and persisting infectious diseases that cannot be prevented through vaccines currently such as HIV/AIDS and malaria. Continued research will give us new knowledge and the development of tools in preventing diseases through development of vaccines for these diseases.

1. *As a public Health practitioner, what are some of the challenges in your country within the health sector in terms of research?*

A public health research system is the bedrock of health systems to improve population health, system responsiveness, and equity. An international concern, referred to as the 10/90 gap, is that less than 10% of global funds are devoted to diseases or conditions that account for 90% of the global disease burden, particularly in developing countries (AlKhaldi M et al, 2018).

Public health research is characterized by its multidisciplinary and cross-cutting approach. It draws on epidemiology, biostatistics, human and social sciences applied to health, biology, genetics, and toxicology which usually entails the analysis of data on population samples, on varying scales, depending on the purpose of the research.

However, despite its need for multidisciplinary approach, it is faced by the following challenges;

Public health researchers study population health, well-being, disability and loss of independence, the determining factors for these statuses, whether biological, behavioral, social or environmental and they develop and assess interventions aiming to improve population health, prevent disease, and compensate for disabilities and loss of independence as well as innovations in terms of the organization of health services, social services and medical/social services for the public.

A fundamental determinant of the level of research activity in developing countries is the general social, economic and political environment. Natural disasters such as famine and drought, human disasters such as civil war and war with neighboring countries, international economic recession and local administrative mishaps have changed (and continue to change) the socio-economic landscape of these countries. Such political, economic and social instabilities are obviously not conductive to fruitful research activity. Disasters including man made and natural disasters affect the conduct of research. For example, in South Sudan with the ongoing war since its outbreak in 2013, it is not conducive to conduct research because some of the parts are difficult to reach and are dangerous.

Another challenge is the lack of demand for (and social appreciation of) research from developing countries. Countries such as South Sudan and many other developing countries such as DRC do not have the political will to fund researches. This is because the policy- and decision-makers do not demand and utilize it. Much of their focus is geared towards procurement of weaponry for the ongoing senseless war which continues to ravage the population health badly.

The public, and politicians (members of Parliament) who represent them (the public), are not aware of the utility of research due to low levels of education or illiteracy. The main reason for this is a low level of scientific culture, owing to underdevelopment. For certain countries in sub-Saharan Africa, 70% illiteracy and 50% absolute poverty rates are reported ([United Nations Development Program, 1999](https://www.cambridge.org/core/journals/the-british-journal-of-psychiatry/article/conducting-psychiatric-research-in-the-developing-world-challenges-and-rewards/CBE9588E9EDE8974F557A19B5ABC92FB/core-reader#ref4)). For example, you may be surprised to see a member of parliament in the national legislative assembly who is unable to even write his names. How do u expect such people to be able to deliberate on policies that will support a helpful research? In South Sudan, research is not paid attention, and this is due to the low levels of education as it a country with the worst levels of education, thence, the appointed members of parliament (based on the know who by the president) who are supposed to come up with policies will just be sleeping in the parliament waiting for their salaries and that is all. It leads to poor research policies in the country.

Resource allocation for health research from public funds is essential if research is to be of use for national development. However, few governments in the developing world are willing to allocate a sizeable amount of resources for health research in general. As mentioned above, the policy makers are illiterate, and they serve their greed. They do not look at such allocation as being of importance. Because of limited funding from the public sector, researchers have a restricted choice of topics, and thus are frequently unable to institute research into wider problem areas; objectives of investigations are usually dictated by donors. Every financial year the budget of the country is read more and more funds are allocated to the army forgetting the need to fund health research or research for health.

The research infrastructure in low-income countries is generally weak due to inadequate resources including human resources. South Sudan has been devastated by decades of war in terms of loss of human life, massive displacement, destruction of both physical and social infrastructure, and loss of human resource development opportunities, including the loss of experienced health professionals. This, combined with a lack of awareness, has seriously limited both access to and use of quality reproductive health services including family planning (FP). As a result, the country has some of the highest maternal and child mortality rates in Sub-Saharan Africa (MOH, 2013). Inadequate and insecure budgets, inadequate equipment and supplies, inadequate qualified research professionals and scarcity of technicians and support staff are commonplace.

Literature review is essential in order to be able to learn the background to a particular research problem, to justify research proposals, to avoid ‘reinventing the wheel’, and to write good reports. However, there is limited access to up-to-date resources including journals and books in South Sudan, yet it has the worst internet and expensive compared to the developed countries. This has caused the research needs in the country.

Because of the low level of development which include low levels of human resource development in developing countries, the human resource in some fields such as biomedical sciences as well as psychiatry and neurology which are key in research of common health problem has hindered research greatly leaving these developing countries manned by under skilled personnel undertaking research.

Poor incentive is also another challenge to the research in developing countries including South Sudan. Researches are not given incentives or tokens of appreciation, yet they do a great job in development unlike the members of parliament who do nothing in terms of national development but were given USD 40,000 each last year as appreciation from the president of the republic because of the extension of his tenure in office.

Effects of global warming such as floods have made some areas inaccessible preventing access to these places by researchers. This will narrow the area of coverage for a research creating selection or sampling bias.

Health research is not only the responsibility of the government, but it includes both the public and the private sector. This however has not been looked so by the people in developing countries. In the developing countries, the private sector think it is the work of the government to do research and they don’t see the research to be beneficial to them in the public sector. It is therefore necessary for the public and private sectors to join hands and carry out research together to attain desired answers to unanswered questions.

Health which is can only be achieved through multisectoral involvement means there is also need to multisectoral act and integrate all stake holders in research to achieve better health research answers to unanswered questions.

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