MINISTRY OF HEALTH
REPUBLIC OF GHANA

CARDIOVASCULAR DISEASE PREVENTION AND MANAGEMENT

FOR COMMUNITY-BASED HEALTH PLANNING AND SERVICES (CHPS)

First Edition | 2020

CONTENT

FOREWORD

Cardiovascular diseases (CVDs) are a growing public health problem in Ghana and other countries in Sub-Saharan Africa. Non-communicable disease-related deaths have increased by 55% from 2000 to 2016. CVDs are one of the top two causes of mortality in the adult population in Ghana, accounting for more institutional deaths than malaria in 2008.

According to the Ghana Health Service 2017 Annual Report, the prevalence of hypertension, a major risk factor for CVDs, is increasing rapidly and ranges from 19% to 48% of the adult population. This increase is due to rising life expectancy and change of lifestyle contributing to increased prevalence of predisposing factors for hypertension. Early diagnosis and adequate management of risk factors can prevent the development of CVDs and their fatal consequences.

To improve the risk assessment, prevention and management of CVDs at all levels of care, the Ministry of Health of Ghana has developed National Guidelines for the Management of Cardiovascular Diseases with the participation of all relevant stakeholders and reflecting internationally approved management pathways for CVDs. The Guidelines serve as a practical guide for assessing risks and, preventing and managing the most important CVDs prevalent in Ghana and can be used at all levels of care.

For the benefit of healthcare workers at the lower levels of care, this document, "Cardiovascular Disease Prevention and Management for Community-based Health Planning and Services (CHPS) facilities", a simpler and easier to use version focussing on disease prevention, has been developed.

We hope that this document will be useful and beneficial for all its users providing cardiovascular disease prevention and management services at our CHPS compounds and facilities.

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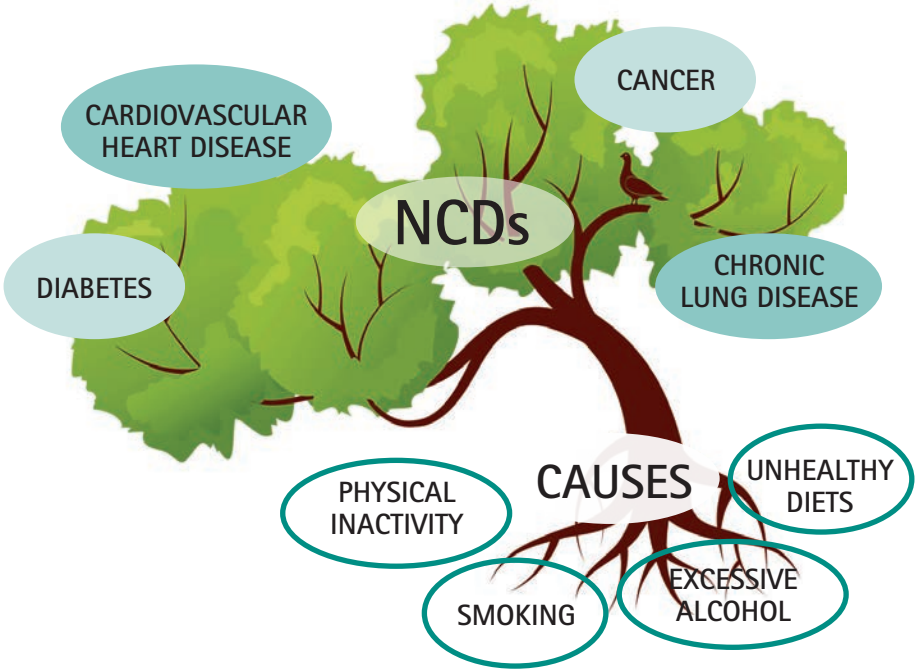
Director-General, Ghana Health Service

June 2020

1 INTRODUCTION

Non-communicable diseases (NCDs), which comprise cardiovascular diseases, diabetes, cancers, chronic obstructive airway diseases etc., account for 60% of the 58 million deaths worldwide; 80% of these deaths occur in low and middle-income countries (LMIC) like Ghana. People in LMICs tend to get NCDs at younger ages, suffer longer and die sooner than those in high income countries. Almost half of NCD related deaths are attributable to cardiovascular diseases (which include heart diseases and stroke).

Most NCDs, including cardiovascular diseases, are considered as lifestyle diseases. The common behavioural or lifestyle conditions leading to cardiovascular diseases or NCDs include physical inactivity or lack of physical exercise, an abnormal diet (a diet high in salt, fat and sugar), smoking and excessive alcohol intake.



Even though both urban and rural dwellers are predisposed to these lifestyle diseases, cardiovascular diseases are more common among urban dwellers who are more likely to smoke, eat unhealthy food and live sedentary (inactive) lifestyle. LMICs like Ghana have seen significant increase in CVD and NCD burden because of rural-urban migration, increasing urban poverty and unhealthy lifestyle.

Unfortunately, African countries such as Ghana must also manage a high burden of communicable or infectious diseases such as malaria, tuberculosis, HIV/AIDS, diarrhoeal diseases as well as maternal and childhood diseases. Hence, Ghana and other LMICs mainly in Africa are said to have a double burden of diseases i.e. both infectious or communicable diseases and non-communicable diseases co-exist.

This guideline contains information to help community health workers identify patients with cardiovascular diseases or risk factors at the Community-Based Health Planning and Services (CHPS) compound and to help them provide initial basic management before referring.

REFERRAL PROCESS

Why refer?

- **If the health facility lacks the appropriate resources needed for the diagnosis and management of the patient in the form of:**
  - Lack of expertise/qualified health workers.
  - Lack of appropriate diagnostic tools.
  - Lack of appropriate/right medication.
- **If a patient and the family request for second opinion or different level of care.**

Patients should be referred in accordance with agreed arrangements to facilities where the necessary competence, tools and support exist.

Notification and prior information about the patient should be undertaken to ensure the receiving health facility is adequately prepared for continuity of care.

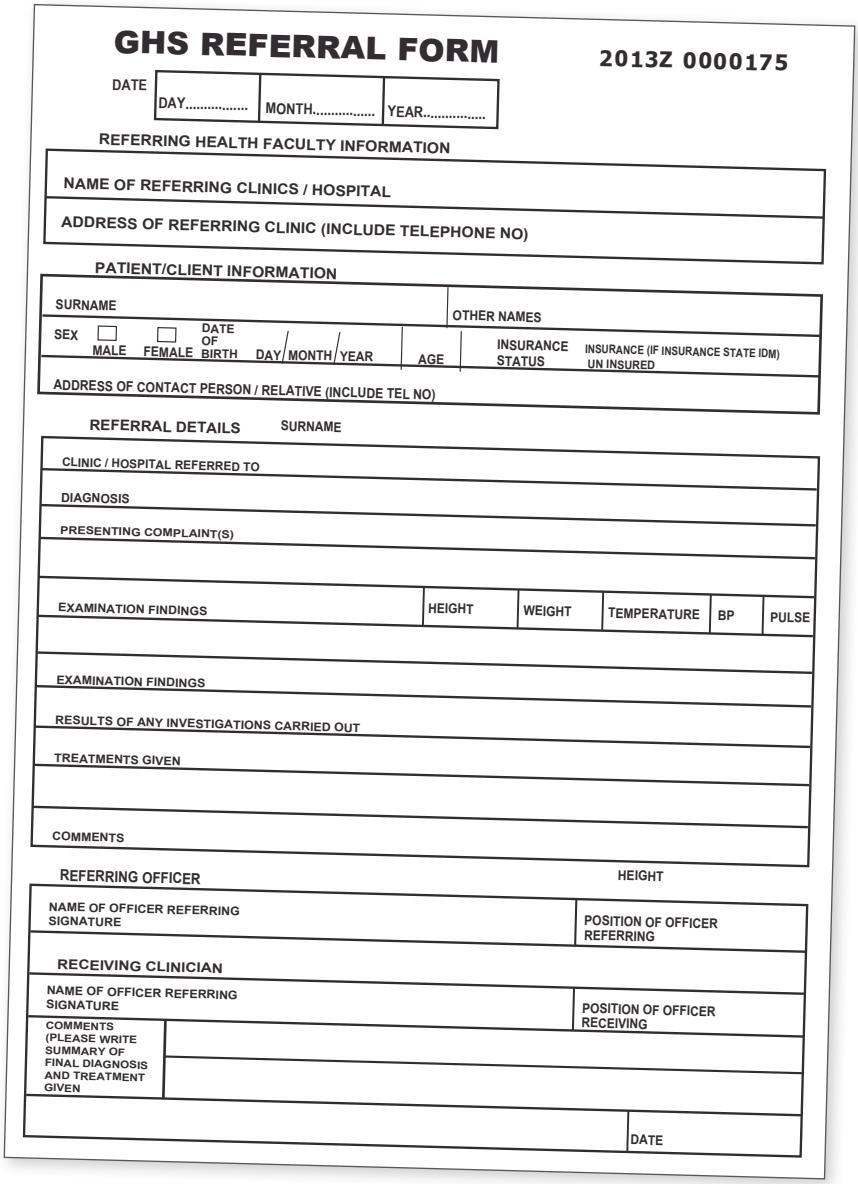
STEPS IN THE REFERRAL PROCESS

- **Identify the facility to receive the patient.**
- **Notify the facility about the referral.**
- **Write a referral letter including:**
  - Date
  - Name and contact of referring clinician/health worker
  - Name of patient
  - Reason for referral
  - Patient's history, clinical finding, test results and prior treatment
  - Provisional diagnosis
  - Signature of referring clinician
- **Request for feedback from the receiving clinician/facility including:**
  - Final diagnosis
  - Long term management plan and follow up
  - Name and contact of the receiving physician/health worker

EMERGENCY CONTACTS

Police / Fire Service / Ambulance: 112

Sample of a referral form:



GHS REFERRAL FORM 2013Z 0000175

DATE | DAY..... | MONTH..... | YEAR.....

REFERRING HEALTH FACULTY INFORMATION

NAME OF REFERRING CLINICS / HOSPITAL

ADDRESS OF REFERRING CLINIC (INCLUDE TELEPHONE NO)

PATIENT/CLIENT INFORMATION

SURNAME | OTHER NAMES

SEX ☐ MALE ☐ FEMALE | DATE OF BIRTH DAY / MONTH / YEAR | AGE | INSURANCE STATUS | INSURANCE (IF INSURANCE STATE IDM) UN INSURED

ADDRESS OF CONTACT PERSON / RELATIVE (INCLUDE TEL NO)

REFERRAL DETAILS SURNAME

CLINIC / HOSPITAL REFERRED TO

DIAGNOSIS

PRESENTING COMPLAINT(S)

EXAMINATION FINDINGS | HEIGHT | WEIGHT | TEMPERATURE | BP | PULSE

EXAMINATION FINDINGS

RESULTS OF ANY INVESTIGATIONS CARRIED OUT

TREATMENTS GIVEN

COMMENTS

REFERRING OFFICER HEIGHT

NAME OF OFFICER REFERRING SIGNATURE | POSITION OF OFFICER REFERRING

RECEIVING CLINICIAN

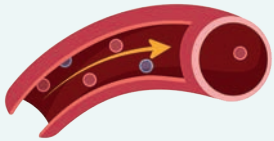
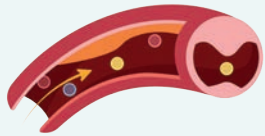
NAME OF OFFICER REFERRING SIGNATURE | POSITION OF OFFICER RECEIVING

COMMENTS (PLEASE WRITE SUMMARY OF FINAL DIAGNOSIS AND TREATMENT GIVEN

DATE

2 RISK FACTORS FOR CARDIO-VASCULAR DISEASES AND THEIR MANAGEMENT

Risk factors are conditions that, when present, put people at a greater likelihood of developing atherosclerotic (hardening of the arteries due to high lipid/cholesterol deposition in the inner lining) cardiovascular diseases (ASCVD). They, however, do not necessarily identify the disease itself. The term ASCVD comprises coronary artery disease, cerebral and carotid artery disease which can cause heart attack and stroke respectively.

Type	Normal arteries	Atherosclerotic arteries
State of the arteries	 NORMAL LUMEN	 PLAQUE FORMATION
Predisposing factors	▪ Healthy diet including intake of fruits, vegetables, low carbohydrate and salt diet ▪ Physical exercise ▪ No smoking ▪ No or low alcohol intake	▪ Unhealthy diet including high fat, salt and carbohydrate intake ▪ Physical inactivity ▪ Smoking ▪ High alcohol intake

Cardiovascular diseases (ASCVD) have predisposing factors known as risk factors which together increase a person's chance of having a stroke or heart attack (the most common ASCVD). These cardiovascular risk factors may be modifiable (can be changed) or non-modifiable.

Non-modifiable risk factors	Modifiable risk factors
▪ Advancing age (M>55yrs., F>65 yrs.) ▪ Male gender ▪ Personal history of ASCVD such as stroke, heart attack ▪ Family history of ASCVD such as stroke, heart attack ▪ Race	▪ Smoking ▪ Physical inactivity ▪ Unhealthy diet ▪ Obesity ▪ Diabetes Mellitus ▪ High cholesterol

Patients should be educated on the risk factors for cardiovascular diseases and the lifestyle modification necessary to reduce their cardiovascular risk. Lifestyle modification typically involves altering long term unhealthy habits to better habits such as healthy eating or increasing physical activity. This is not easy and requires repeated emphasis of its importance and indicating the consequences, if the changes are not made.

LIFESTYLE MODIFICATION TO REDUCE CARDIOVASCULAR RISK

- **Reduce total daily salt intake:**
  - Dietary salt should not exceed 1 teaspoon full per day.
  - Do not add salt at table.
- **Reduce alcohol consumption (to ≤ 2 units per day for men and ≤ 1 unit per day for women):**
  - One tot (25ml) of Gin or Akpeteshie (a local gin) is 1 unit.
  - One mini bottle (330ml) of beer (5%) is about 2 units.
  - One large bottle (600ml) of beer (5%) is about 4 units.

ALCOHOL UNITS GUIDE

Pint of premium beer (5%) eg. Peroni, Stella Artois, Heineken = 2.8 units

Pint of cider (5%) eg. Savanna dry = 2.8 units

Alcopop 275ml (4%) eg. Club Shandy, Smirnoff ice = 1.4 units

Can of beer 330ml (4%) Club beer, Star beer = 1.7 units

Gin / Vodca / Rum 35 ml (37.5%) = 1.3 units

Spirits 1 litre (37.5%) = 37 units

Small bottle of wine 187.5ml (12%) = 2.3 units

Bottle of wine 750ml (12%) = 9.2 units

- **Stop smoking**

- **Daily intake of fruits and vegetables**

- **Use oils high in polyunsaturated fat (e.g. soya beans oil, salmon, tuna, herrings) and monounsaturated fats (e.g. cashew nuts, groundnut, avocado pear, etc).**

➔ **Avoid coconut oil and use palm oil in moderation.**

Fat content of common cooking oil in Ghana			
Oil type	Monounsaturated fat (good)	Polyunsaturated fat (good)	Saturated fat (bad)
Palm oil (unrefined)	35%	15%	50%
Groundnut oil	46%	32%	17%
Coconut oil	10%	4%	86%
Soybean oil	58%	23%	16%

- Consume whole grains with high fibre content (e.g. corn, millet, unpolished rice, wheat) to avoid glucose surges.

- At least 150 minutes of exercise per week e.g. walking, skipping, farming, gardening, washing, dancing and sport such as football, tennis, golf, etc.

3 SYMPTOMS OF CARDIOVASCULAR DISEASES

The symptoms of cardiovascular diseases are varied and may overlap with those of other medical conditions. The common ones are summarized below.

DYSPNOEA OR BREATHLESSNESS

- Also referred to as difficulty in breathing. It is a subjective experience of breathing discomfort or difficulty.
- It should be treated seriously especially if of sudden onset or worsening.
- Cardiac (heart) causes include heart failure from hypertension, valve disease, heart attack, congenital heart disease, etc.
- Non-heart related causes include anaemia and pneumonia.

CHEST PAIN

- Chest pain is discomfort or pain, pressure or tightness that is felt anywhere in the chest. Some of the causes can be benign or not serious but others can be life threatening and should not be ignored.
- Life threatening causes of chest pain include myocardial infarction (heart attack), pulmonary embolism (clot in the lung), aortic dissection (tear of the aorta) and tension pneumothorax (trapped air in the pleura space).
- Hence, any chest pain that occurs suddenly, associated with hypertension, deep venous thrombosis (DVT), difficulty in breathing, physical activity or exertion, etc., should be considered as serious or life threatening.

Associated symptoms of chest pain	Possible cause of the chest pain
Nausea, vomiting, sweating pain radiates to jaw, shoulder and arm	Acute myocardial infarction (Heart attack)
Sudden tearing central chest which radiates to the back with history of hypertension	Aortic dissection (tear in the aorta)
Chest pain associated with activity and relieved by rest	Angina pectoris
Chest pain associated with breathlessness and unilateral leg swelling	Pulmonary embolism (clot in the lungs associated with DVT)
Sudden or associated with fall, assault or road traffic accident with worsening breathlessness	Tension pneumothorax
Chest pain worse on breathing and associated with cough and fever	Pneumonia

SYNCOPE

- It is the transient loss of consciousness usually related to insufficient blood flow to the brain. It is characterised by rapid onset, short duration and spontaneous recovery.
- Anybody with a sudden transient loss of consciousness should be investigated to ascertain the cause.
- Some of the causes may be due to heart diseases such as a heart attack, valve disease, very low or very rapid pulse or heart rate.
- Other causes may not be serious or life threatening such as standing for a long time, medication, dehydration or sudden fear.

PALPITATIONS

- This refers to an unpleasant awareness of the forceful, rapid or irregular beating of the heart.
- Commonly due to abnormal beating of the heart(arrhythmia) such as missed beats(ectopic) but some may be due to serious underlying heart condition.
- When palpitation is associated with syncope/dizziness, dyspnoea and chest pain should be investigated by a doctor.

OEDEMA

This is due to fluid build-up in the tissues of the body. It typically begins in the lower/dependent parts of the body (e.g. legs). When oedema is generalized, it is called anasarca. The causes of oedema are commonly due to heart, liver and kidney disease. However, for some, the causes may be due to local problem with the vein or drugs such as Nifedipine and Amlodipine.

4 HYPERTENSION

Hypertension is defined as a clinic/health facility measured systolic blood pressure (SBP) value ≥ 140 mmHg and/or diastolic blood pressure (DBP) values ≥ 90 mmHg.

The causes of hypertension are classified into two groups:

- Primary hypertension is the commonest form and constitutes 95% of hypertension cases. The cause is not known.
- Secondary hypertension is due to an underlying cause that can be diagnosed and treated such as kidney disease.

CLASSIFICATION OF HYPERTENSION

Category	Systolic		Diastolic
Optimal	<120	and	<80
Normal	120–129	and/or	80–84
High normal	130–139	and/or	85–89
Grade 1 hypertension	140–159	and/or	90–99
Grade 2 hypertension	160–179	and/or	100–109
Grade 3 hypertension	≥180	and/or	≥110
Isolated systolic hypertension	≥140	and	<90

IMPORTANCE OF HYPERTENSION

Hypertension is the leading cause of death in adult Ghanaian and African. The deaths from hypertension are due to stroke, heart disease and kidney failure.

Majority of patients with hypertension are not aware and hence they develop the above complications slowly or present with sudden complication as first presentation of hypertension.

Unfortunately, significant numbers of people die from hypertension because they are not aware they have hypertension or they do not take their medication or comply with the treatment.

DIAGNOSIS OF HYPERTENSION

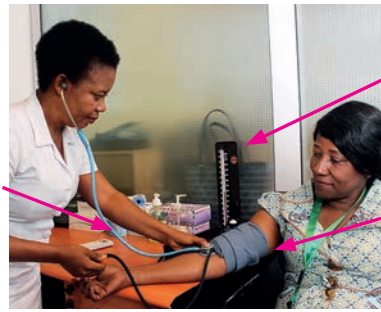
Hypertension is usually asymptomatic in the early stages and can only be detected by measuring the blood pressure.

Therefore, it is important to measure the blood pressure of every patient who visits the facility or those who receive home visit, irrespective of the reason for the visit. This helps to identify high pressure in time for treatment to be started.

MEASUREMENT OF BP IN THE HEALTH FACILITY SETTING OR HOME OF THE CLIENT:

- Patient should be seated comfortably for 3-5 minutes with the arm placed at the level of the heart (e.g. on the arm of a chair or on a table).
- The patient should not have smoked or ingested caffeine-containing foods or drinks in the previous 30 minutes before the BP measurement.
- The appropriate cuff size should be selected for the patient. The bladder within the cuff should encircle 80% of the arm during the BP measurement.
- Take 3 BP measurements 1-2 minutes apart. Additional measurements should be performed if the first 2 readings differ by >10 mmHg. The patient's BP is the average of the last 2 BP readings.

BP measurement with automatic sphygmomanometer



MANAGEMENT OF HYPERTENSION

All patients with hypertension should be counselled on healthy diet and lifestyle (see chapter 2 on cardiovascular risk factors).

Note that exercise can only be initiated when the blood pressure has come down significantly.

→ They should be referred to a higher-level facility for initiation of treatment.

Compliance with hypertension therapy is very important, and this should be made known to the patient.
Home monitoring and recording of blood pressure should be encouraged.

5 STROKE

Stroke is a neurological deficit caused by an acute focal injury of the central nervous system by a vascular (arterial) cause, including cerebral infarction, cerebral haemorrhage, and subarachnoid haemorrhage.

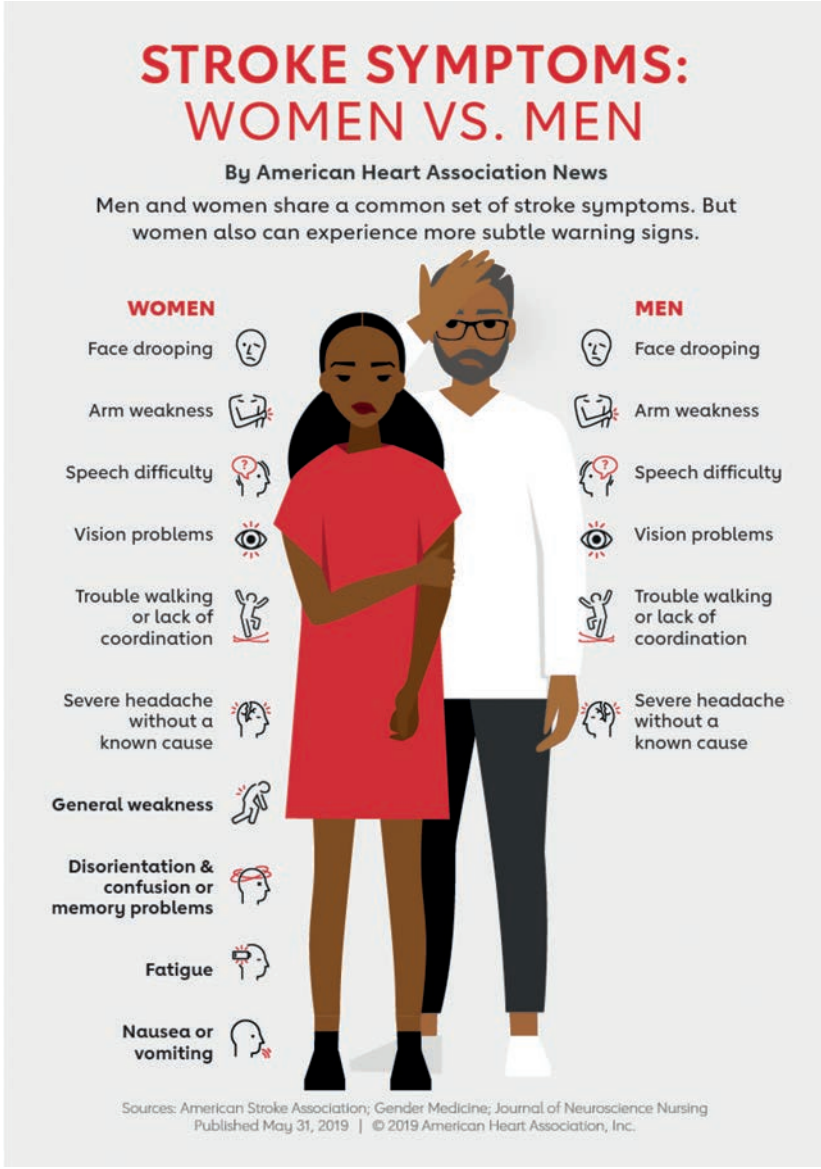
Stroke is the leading cause of death in adults in Africa. Hypertension is the leading cause of stroke in Ghana and Africa. This makes hypertension an important risk factor. If we want to reduce the occurrence of stroke, we must identify patients with hypertension to initiate treatment.

The sudden onset of symptoms is an important clue to the diagnosis of stroke. The time of symptom onset is crucial as it determines the mode of treatment.

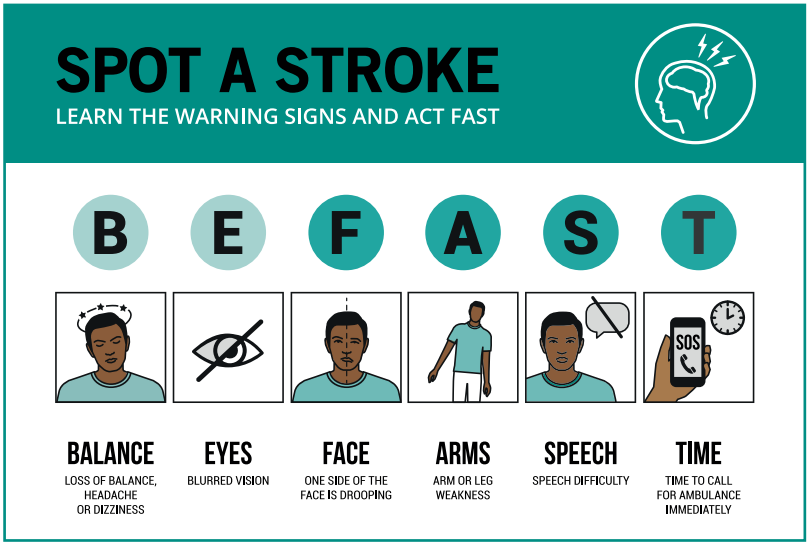
INITIAL MANAGEMENT SHOULD INCLUDE:

- Assessment of ABC (airway, breathing and circulation)
- Elevate the head of the bed at 20-30 degrees
- Avoid lifting the patient on the affected side to avoid shoulder dislocation.
- Avoid putting objects into the patient's mouth during a seizure. Instead, place patient on the lateral side and clear the area of obstacles.
- Give suppository paracetamol 1g if axillary (armpit) temperature is more than 37.2 degrees.

➔ Refer the patient to the next level of care.

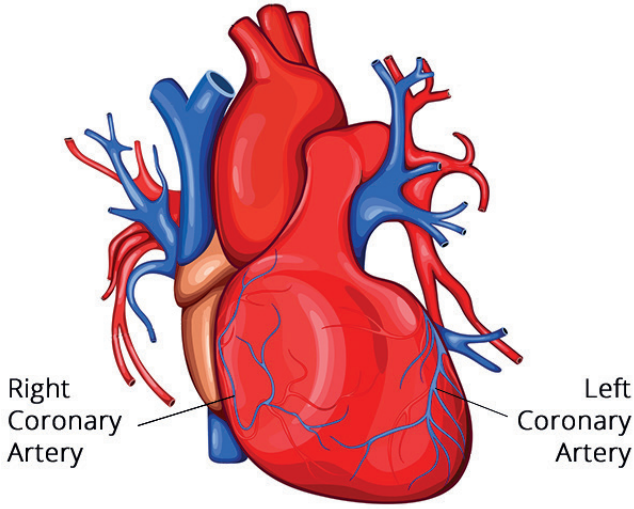

STROKE SYMPTOMS:
WOMEN VS. MEN
By American Heart Association News
Men and women share a common set of stroke symptoms. But women also can experience more subtle warning signs.
WOMEN
Face drooping
Arm weakness
Speech difficulty
Vision problems
Trouble walking or lack of coordination
Severe headache without a known cause
General weakness
Disorientation & confusion or memory problems
Fatigue
Nausea or vomiting
MEN
Face drooping
Arm weakness
Speech difficulty
Vision problems
Trouble walking or lack of coordination
Severe headache without a known cause
Sources: American Stroke Association; Gender Medicine; Journal of Neuroscience Nursing
Published May 31, 2019 | © 2019 American Heart Association, Inc.

➔ All patients with a suspected stroke should be referred to a health facility with a physician specialist and the capacity to perform a head CT scan immediately. Laboratory investigations should not delay the referral and Aspirin should not be administered when there is no head or brain CT scan.



6 CHEST PAIN/HEART ATTACK

The heart, like any organ of the body needs blood supply. The artery that supplies the heart is called coronary arteries.



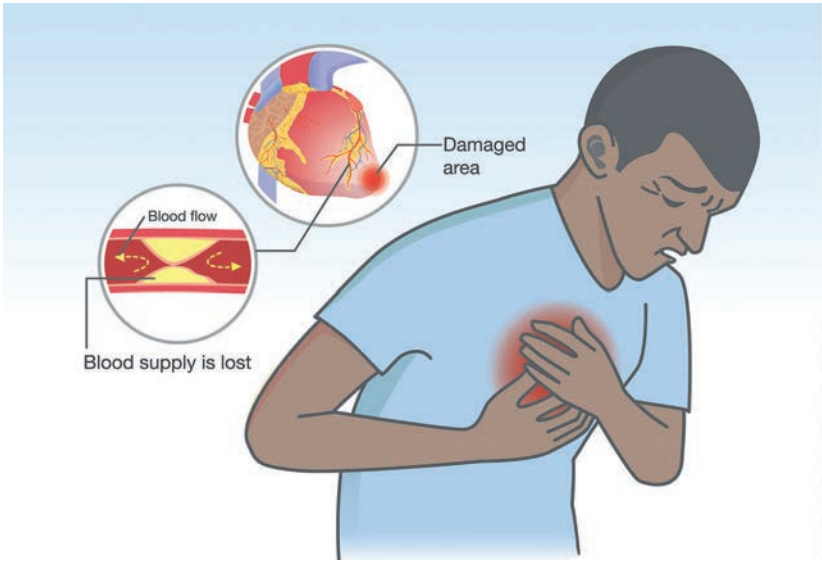
If the artery is blocked or narrowed, the patient can experience chest pain (angina) on exertion.

TYPICAL ANGINA PECTORIS IS CHARACTERIZED BY:

- Chest pain which is squeezing, tight, gripping or choking in nature and may radiate to the left arm, neck or jaw
- is brought on by exertion (e.g. walking) or stress
- and is relieved by rest or Nitroglycerin (a type of heart medicine).

Sometimes cardiac ischaemia (i.e. reduced blood supply to the heart) may manifest in uncommon ways such as dyspnoea, palpitation, syncope or mid-epigastric discomfort especially in women, diabetics and the elderly and are referred to as *angina-equivalents*.

When there is a sudden lack of blood supply to the heart leading to heart muscle injury or death, the term **Acute Coronary Syndrome** is applied. This is what is referred to (to some extent) as a "heart attack" or myocardial infarction (MI). This causes sudden chest pain associated with sweating, restlessness, nausea and vomiting.



The pain and symptoms of heart attack usually occur at rest and last longer (more than 15 minutes).

A doctor's or physician specialist's input should be sought for patients suspected to have chest pain from the heart such as typical angina pectoris and heart attack.

➔ **Heart attack is an emergency and should prompt immediate attention and referral to the nearest hospital with a doctor or physician specialist for further management.**

INITIAL MANAGEMENT:

- Reassure patient and the relatives
- Oxygen by nasal prongs or face mask to keep SPO_2 >92%
- Patient may be given 300 mg of soluble Aspirin to chew en route to hospital.

7 HEART FAILURE

Heart failure refers to an inability of the heart to pump enough blood to meet the requirements of the body.

THE CAUSES OF HEART FAILURE INCLUDE:

- High blood pressure (commonest cause in Ghana)
- Heart attack or myocardial infarction
- Abnormal heartbeat (arrhythmias)
- Congenital heart disease

SYMPTOMS OF HEART FAILURE:

Patients with heart failure commonly have fatigue and breathlessness particularly with exertion. **Other symptoms include:**

- Dyspnoea or breathlessness at rest
- Palpitations
- Waking up in the night feeling short of breath (paroxysmal nocturnal dyspnoea)

- Difficulty lying flat on the back because of shortness of breath (orthopnoea)
- Swelling of the feet (pedal oedema) or entire body (anasarca)

MANAGEMENT OF HEART FAILURE:

Counselling of patients with heart failure should include:

- Decreasing salt intake
- Smoking cessation
- Avoidance of alcohol
- Restricting fluid in severe heart failure to 1000-1500 mls per day
- Adherence to medication

➔ **All patients with suspected heart failure should be seen by a doctor or specialist physician and should be referred.**

However initial management for acute ill patients may include the following whilst preparations are made for referral:

- Reassure the patient and relatives
- Propping up in bed
- Oxygen by nasal prongs or face mask to keep SPO_2 >92%

8 DEEP VEIN THROMBOSIS (DVT) AND PULMONARY EMBOLISM

DVT is caused by blood clot in the deep veins of the body, commonly the deep veins of the leg.
DVT of the leg commonly presents as a unilateral leg swelling associated with pain and warmth.

Pulmonary embolism (PE) is caused by the movement of the blood clot through the vein into the lung arteries and blocking the arteries.

The symptoms of acute pulmonary embolism may vary widely. It may present as difficulty breathing, chest pain, haemoptysis (bloody cough) or syncope.

RISK FACTORS FOR DVT AND PE

- Long travel (>4 hours) in an aeroplane or bus without movement.
- Prolong hospitalization or bed rest >3 days
- Stroke
- Paralysis of the legs or limbs
- Trauma such as fracture of leg and hip bones.
- Surgery
- Heart failure
- Cancer

➔ **All patients with suspected DVT or PE should be referred immediately to a facility with a doctor for further evaluation and management.**

9 ABNORMAL BEATING OF THE HEART (CARDIAC ARRHYTHMIAS)

Arrhythmia is a change in the normal sequence or way the heart beats. This abnormal beating includes an increase in the heart rate or pulse (tachyarrhythmia), a decrease in the heart rate or pulse (bradyarrhythmia) or a change in the regular beating of the heart or pulse. The commonest form of arrhythmia is missed beats or ectopic beat.

Cardiac arrhythmias or abnormal pulse may present with:

- Palpitations
- Dizziness
- Chest pain
- Loss of consciousness
- Seizures
- Shortness of breath
- Fatigue
- Light-headedness

➔ **Refer to a facility with a doctor if a diagnosis of an arrhythmia is suspected.**

➔ **Resuscitation (CPR or cardiopulmonary resuscitation) should be initiated with any patient who presents with cardiac arrest (no pulse and loss of consciousness) whiles arrangements are being made to refer.**

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NOTES

NOTES

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