Learning Objectives (1)

- At the end of this session participants are expected to be able to:
  - Define stroke
  - Describe burden, risks, types and causes of stroke
  - Recognize the clinical presentation of stroke
  - Perform appropriate investigations to patients with stroke
  - Implement interventions to prevent stroke
  - Provide non pharmacological and pharmacological treatment to patients with stroke
  - Implement referral pathway for patients with stroke
  - Conduct regular follow up monitoring to patients with stroke

Activity: Brainstorming

- What is Stroke?

Definition of Stroke

- Stroke, is defined as “rapidly developing signs of focal or global disturbance of cerebral or intracranial neuronal function with symptoms lasting for more than 24 hours or leading to the death of the patient with no apparent cause other than that of vascular origin”
- A stroke is a rapid loss of brain function due to the disturbance in the blood supply to brain.
- A stroke happens when blood flow to a part of the brain stops and it is sometimes called a “brain attack”

Activity: Buzzing

- What is the burden of stroke?

Burden of Stroke (1)

- Stroke is a leading cause of morbidity and mortality in adults in the productive ages
- According to the WHO, each year 15 million people suffer from stroke worldwide. Of these, 5 million die and another 5 million are permanently disabled
- 8% of all first-ever strokes occur in Africa and 5% of the 30 million people, who survived stroke worldwide, live in Africa
- Stroke is uncommon in people under 40 years; when it does occur, the main cause is high blood pressure
- Stroke also occurs in about 8% of children with sickle cell disease

Burden of Stroke (2)

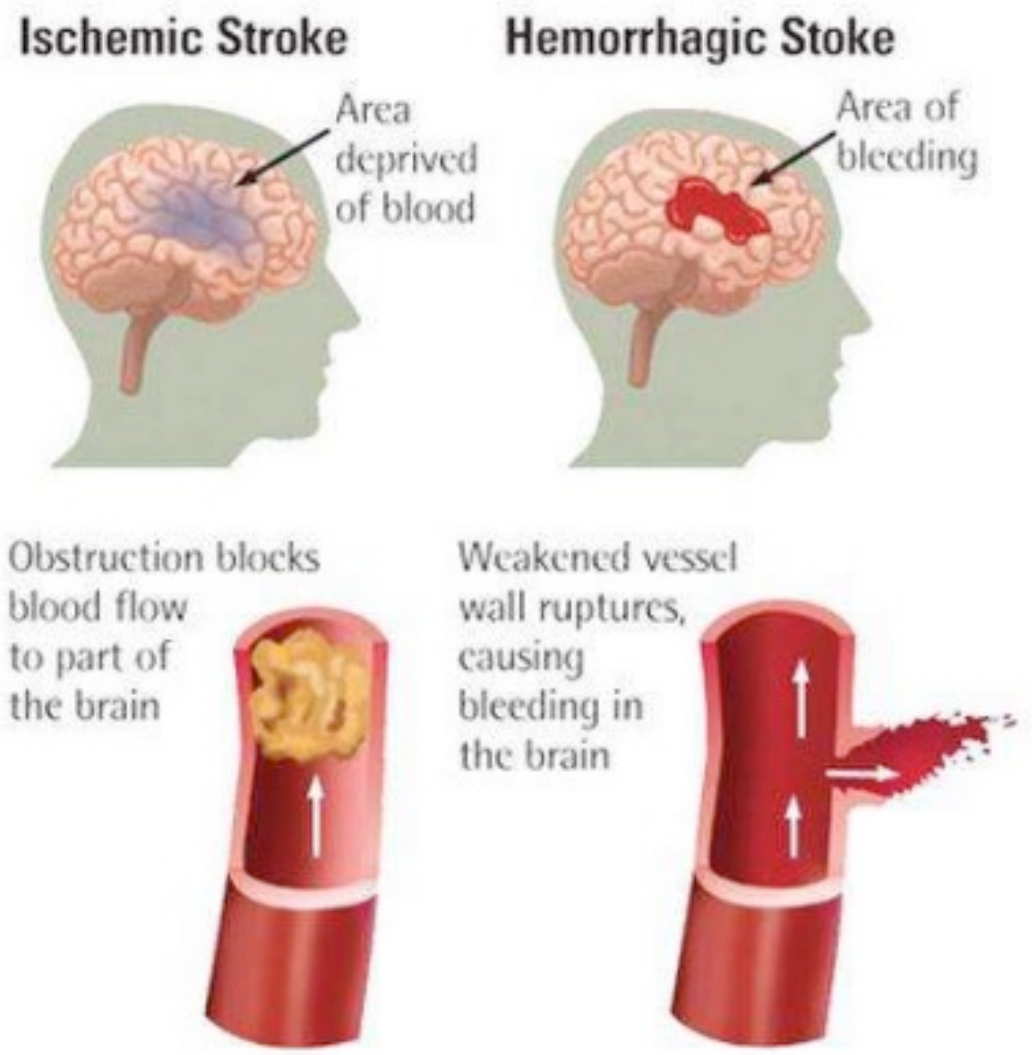
Stroke mortality

- Mortality among stroke patients is highest in the first 30 days of stroke onset
- Hospital-based studies have demonstrated a one-month mortality rate of between 27% and 46% in Africans
- At Muhimbili National Hospital, studies have found a 30 days mortality rate of 33.3%

Types of Stroke (1)

Three main types of strokes:

- Ischemic strokes
- Hemorrhagic strokes
- Transient ischemic attacks (TIAs), also referred to as mini-strokes



Ischemic Stroke

- Ischemic stroke is the most common form of stroke, accounting for around 85% of strokes
- This type of stroke is caused by blockages or narrowing of the arteries that provide blood to the brain, resulting in ischemia - severely reduced blood flow
- These blockages are often caused by blood clots
- Clots can be caused by fatty deposits within the arteries called plaque

Hemorrhagic Stroke

Hemorrhagic stroke

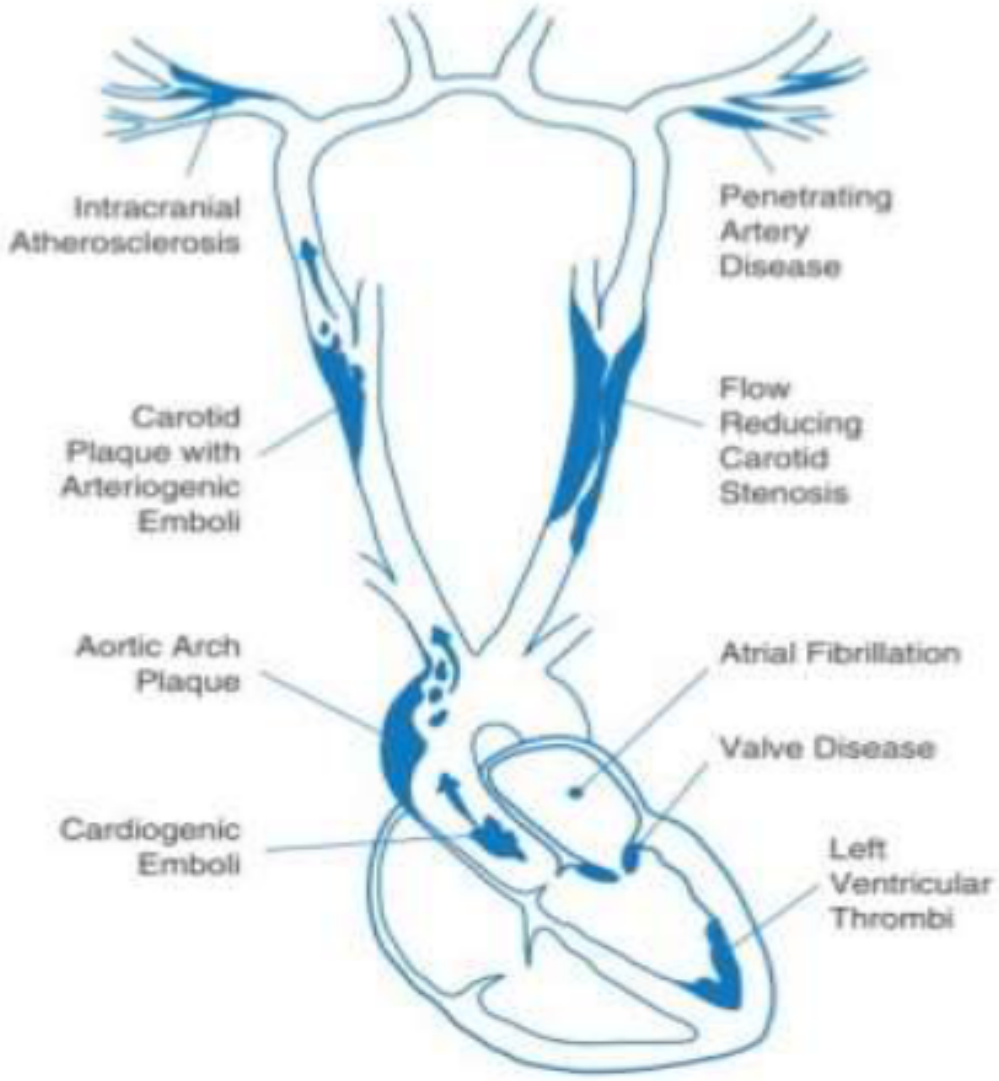
- Caused by arteries in the brain either leaking blood or bursting open due to conditions such as hypertension, trauma, blood-thinning medications and aneurysms (weaknesses in blood vessel walls)
- **Intra cerebral** hemorrhage is the most common type of hemorrhagic stroke: brain tissue is flooded with blood after an artery in the brain bursts
- **Subarachnoid** hemorrhage is less common: bleeding occurs in the subarachnoid space - the area between the brain and the thin tissues that cover it

Transcient Ischemic Attack (TIA) (1)

Transcient Ischaemic Attacks

- The flow of blood to the brain is only briefly interrupted
- Similar to ischemic strokes in that they are often caused by blood clots or other debris
- Should be regarded as medical emergencies
  - Indicate that there is a partially blocked artery or clot source in the heart
  - Without treatment, over a third of people who experience a TIA go on to have a major stroke within a year
  - Between 10-15% will have a major stroke within 3 months of a TIA

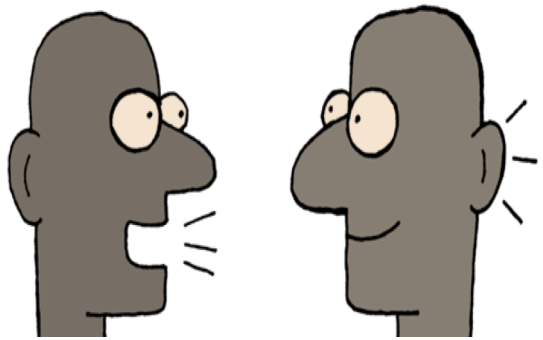
Causes of Transient Ischemic Attacks (TIA)



- Large artery atherosclerosis
- Cardio-aortic embolism
- Small artery occlusion
- Other causes
- Undetermined causes
  - unknown – cryptogenic embolism
  - unknown – other cryptogenic
  - unknown – incomplete evaluation
  - unclassified

Activity: Buzzing

- What is the clinical presentation of stroke?



Clinical Presentation of Stroke

Symptoms of Stroke (1)

- Strokes occur quickly and symptoms often appear suddenly without warning.
- Main symptoms include:
  - Confusion, including trouble with speaking and understanding
  - Headache, possibly with altered consciousness or vomiting
  - Numbness of the face, arm or leg, particularly on one side of the body
  - Trouble with seeing, in one or both eyes
  - Trouble with walking, including dizziness and lack of co-ordination

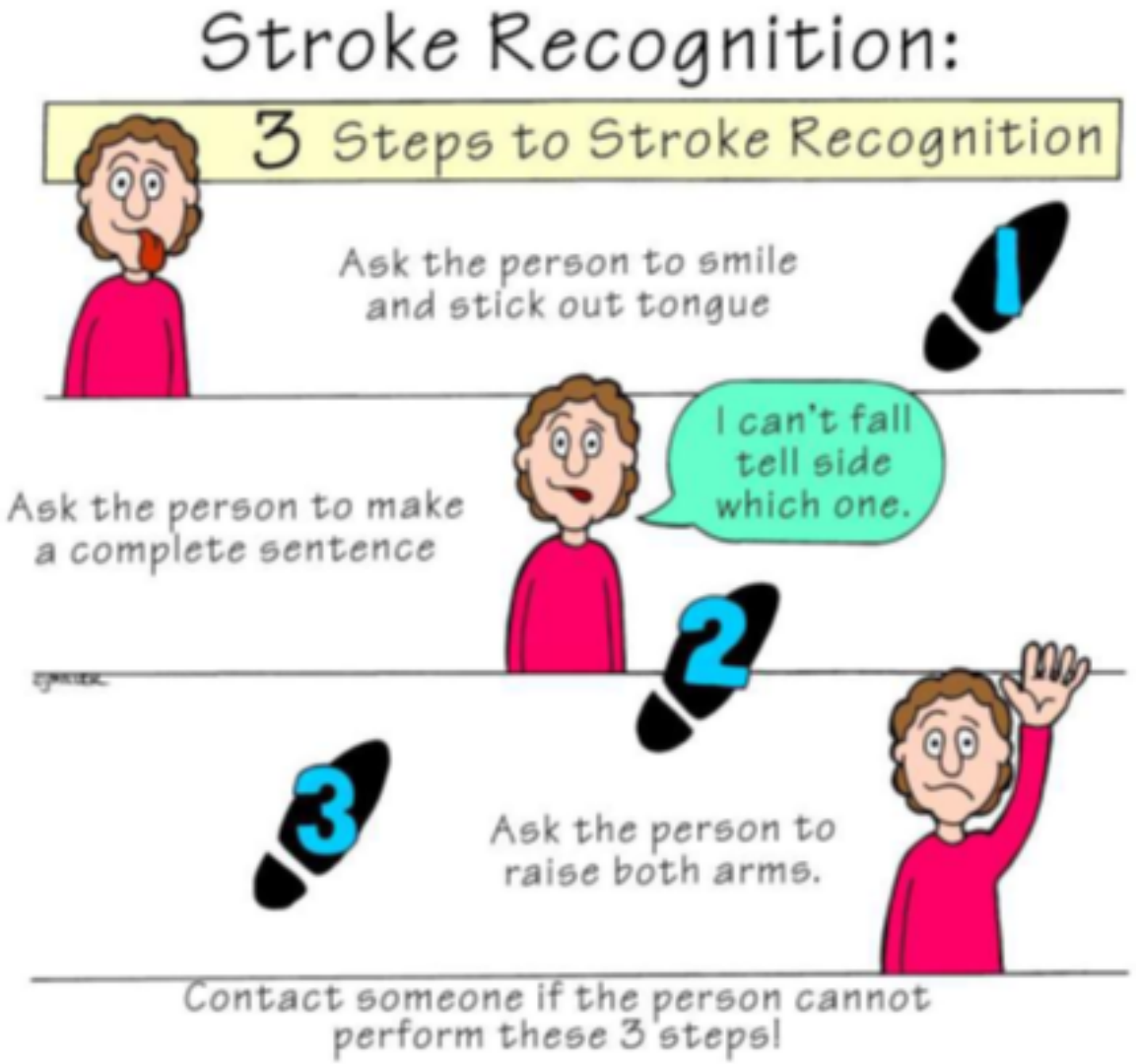
Symptoms of Stroke (2)

- In addition to the persistence of the problems listed above, patients may also experience the following:
  - Bladder or bowel control problems
  - Depression
  - Trouble controlling or expressing emotions
  - Pain in the hands and feet that gets worse with movement and temperature changes
  - Paralysis or weakness on one or both sides of the body

Signs of a Stroke

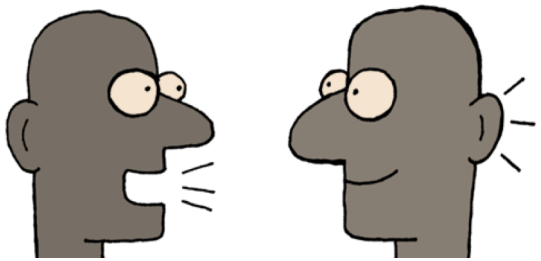
The acronym F.A.S.T. is a way to remember the signs of stroke, and can help identify the onset of stroke more quickly:

Stroke Recognition



Activity: Buzzing

- How are going to investigate a patient for stroke?



Investigations for Patients With Stroke (1)

- Several different diagnostic tests to determine type of stroke:
  - Physical examination
  - Blood tests
  - CT scan a series of X-rays
  - MRI scan
  - Carotid ultrasound
  - Cerebral angiogram
  - Echocardiogram

Activity: Brainstorming

- What are the interventions for preventing stroke?

Interventions for Prevention of Stroke (1)

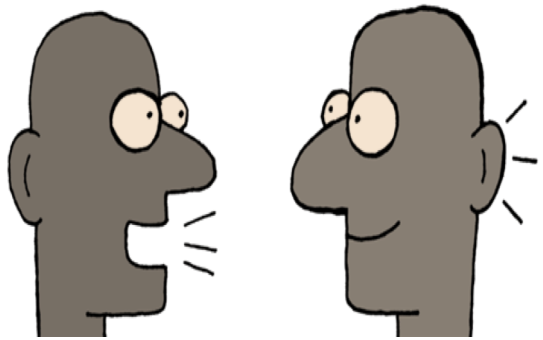
- Community to live healthier
  - Avoiding smoking and second-hand smoke
  - Eating foods low in saturated fats, trans-fats, sodium and added sugars
  - Be physically active
  - Reach and maintaining a healthy weight
  - Regular medical check ups including BP and working with a healthcare provider to manage any abnormalities
  - Take medicine as directed

Interventions for Prevention of Stroke (3)

- The acronym FAST can be used to educate the community on early recognition of stroke signs
  - **F**ace drooping: does one side of the face droop or is it numb?
  - **A**rm weakness: is one arm weaker than the other?
  - **S**peech difficulties: is the person unable to speak or hard to understand?
  - **T**ime for action: go to the nearest hospital

Activity: Buzzing

- What are the non-pharmacological and pharmacological treatment of stroke



General Measures to be Followed in all Acute Strokes – First 48 hours (1)

- **Patient positioning**
  - Mild head elevation to assist venous return
  - Avoid the neck being flexed
  - Prevent tongue falling back
  - No tight oxygen (O2) mask compressing the neck veins

General Measures to be Followed in all Acute Strokes – First 48 hours (2)

- **Airway & Oxygen**
  - Pulse oxymetry – target O2 saturation of >92%
    - Patients with Chronic Obstructive Pulmonary Disease (COPD) / Sleep Apnea, SPO2 should not be more than 92%: they need CO2 to maintain oxygen drive
  - Elective intubations - for airway protection /severely raised intracranial pressures
  - May administer O2, 2 – 4 litres per minute by nasal cannula

General Measures to be Followed in all Acute Strokes – First 48 hours (3)

- **Fluids**
  - IV fluids - avoid Dextrose and excessive fluid administration
  - IV normal saline at 50 cc / hr if needed
- **Blood sugars**
  - Do not give any dextrose containing solutions
  - Maintain sugars < 200 ml/L – give insulin
- **Mobilization**
  - Bed rest for first 24 hours
  - Early gradual mobilization- (after the first 24 hours)
- **Bowel**
  - Stool softeners

General Measures to be Followed in all Acute Strokes – First 48 hours (4)

- **Swallowing**
  - Do the Water swallowing test
- **Decide on:**
  - Oral feeds
  - Ryle's Tub feeds
- **Prevention of Bed Sore**
  - Frequent 2 hourly turning
  - Air mattress
  - DVT Prophylaxis

General Measures to be Followed in all Acute Strokes – First 48 hours (5)

- **Feeding**
  - If prolonged tube feedings necessary – Plan
  - Gastroduodenal feeding
  - Percutaneous endoscopic gastrostomy PEG
  - Discuss with caretakers
- **DVT Prophylaxis**
  - Oral anticoagulant
- **Physiotherapy & Occupational therapy programme**
  - A Home programme to be provided and the primary caregiver educated
  - Use of Aides and splints etc should be shown

General Measures to be Followed in all Acute Strokes – First 48 hours (6)

DVT prophylaxis

In ischemic stroke	In hemorrhagic stroke
1. Initiating pharmacoprophylaxis as soon as is feasible in all patients with acute ischemic stroke 2. For acute ischemic stroke and restricted mobility, give prophylactic-dose LMWH e.g enoxaparin rather than UFH	Prophylactic doses of subcutaneous UFH or LMWH to prevent VTE in patients with stable hematomas and no ongoing coagulopathy after 48 hours of hospital admission

General Measures to be Followed in all Acute Strokes – First 48 hours (7)

- **Antiplatelet treatment**
  - In ischemic stroke start as soon as possible:
  - Tabs. Junior Aspirin 300mg stat then 75mg od, plus
  - Tabs Atorvastatin

General Measures to be Followed in all Acute Strokes – First 48 hours (8)

Antihypertensive Treatment

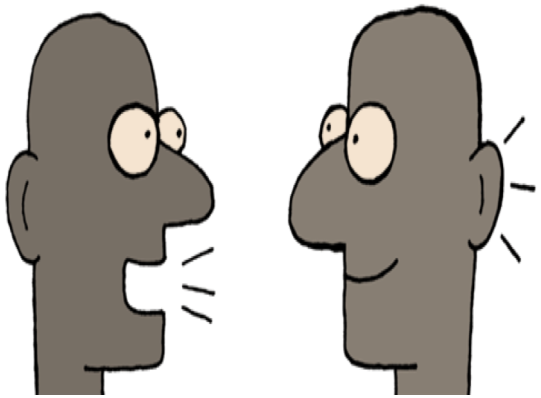
In ischemic stroke	**In haemorrhagic stroke**
Treat Blood pressure only if: Diastolic >120mmHg Systolic >220mmHg	• Maintain SBP <140 mmHg & DBP <90 mmHg • Use**: Iv hydralazine**, Amlodipine, losartan, Bisoprolol • First make sure pain/ bladder/ raised intracranial tension/ hypoxia is not the cause of the hypertension • No administering sublingual calcium-antagonists • A reasonable goal is to lower the blood pressure 15% to 25% First 24Hrs

General Measures to be Followed in all Acute Strokes – First 48 hours (9)

- **Primary caregiver education**
  - Rehabilitation-physiotherapy and occupational therapy
  - Speech therapy
  - Bed sore care /prevention
  - Diet
  - Monitoring BP/Sugars at home
  - Need to continue regular medications
  - Follow up in Stroke clinic

Activity: Buzzing

- When can you refer a patient with stroke?



Referral Pathway for Patients with Stroke

- Patients in acute stroke should immediately be referred to hospital for HEAD CT SCAN
- Don’t start antiplatelet before HEAD CT SCAN

Activity: Brainstorming

- How do you refer a patient with stroke?

Follow up Patients with Stroke

- **Stroke Clinic follow up**
  - Give a referral slip and the necessary investigations to be done before follow-up

Acute Care Checklist

Acute Stroke Care	Hospital care	Discharge
Airway	Bed sore care	Physiotherapy Home program
Oxygenation	Spasticity & contractures	Primary caregiver education
Fluids	Physiotherapy	Use of Aides: Splints /walker
Sugars	Aids - Walker/ Splints	Diet advise
Blood pressure	Speech therapy	Referral to Stroke clinic
Patient positioning	Depression Rx	
Swallowing	Post stroke pain Rx	
Bladder	Sleep Rx	
Bowel	Dementia Rx	
Other drugs: statins, folic acid + B12	Care giver education	
Drugs for comorbid illness		
DVT Prophylaxis		
Heparin		
Antiplatelets		

Rehabilitation (1)

- Strokes are life-changing events that can affect a person both physically and emotionally, temporarily or permanently
- After a stroke, successful recovery will often involve specific rehabilitative activities such as:
  - Speech therapy - to help with problems producing or understanding speech

Rehabilitation (2)

- After a stroke, successful recovery will often involve specific rehabilitative activities such as:

Rehabilitation (3)

- After a stroke, successful recovery will often involve specific rehabilitative activities such as:
  - Joining a support group - to help with common mental health problems such as depression following a stroke
  - Practical support and comfort from friends and family
  - Practice, relaxation and changing communication style, for example using gestures or different tones
  - Physical therapy to relearn movement and co-ordination
  - Occupational therapy to improve ability to carry out routine daily activities, such as bathing, cooking, dressing, eating, reading and writing

Key Points (1)

- Stroke, is defined by the World Health Organization as “rapidly developing signs of focal or global disturbance of cerebral or intracranial neuronal function with symptoms lasting for more than 24 hours or leading to the death of the patient with no apparent cause other than that of vascular origin”

Key Points (2)

- A stroke is a rapid loss of brain function due to the disturbance in the blood supply to brain
- A stroke happens when blood flow to a part of the brain stops and it is sometimes called a “brain attack”
- There are three main types of stroke which Ischemic strokes, Hemorrhagic strokes, Transient ischemic attacks (TIAs), also referred to as mini-strokes
- Treatment include non-pharmacological and pharmacological treatment

Key Points (3)

- Referral to be done for further management
- Prevention include education of healthy living and early treatment of hypertension
- Patient have to be followed up and monitored closely

Session Evaluation

- What are the clinical features of patient with stroke?
- How do you manage a patient with stroke?