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INTRODUCTION

Acute cerebrovascular diseases or strokes are the consequence of an alteration of blood flow in the brain, which causes a transient or permanent deficit of the functioning of one or several areas of the brain. Primary health care workers can help in stroke prevention and management through lifestyle advice, educating the community member about warning signs of stroke, and stroke rehabilitation in patient having suffered a stroke.

LEARNING OBJECTIVES

At the end of the session, participants will be able to:

- Identify patients with suspicion of acute stroke and make appropriate referrals.
- Provide support for follow-up secondary prevention.

TOPICS COVERED

- Types of stroke.
- Recognition of stroke.
- Steps for clinical and neurological work-up.
- Referrals and use of management algorithm for suspicion of acute stroke.
- Secondary prevention.

COMPETENCY

- Improved skills for recognition of acute stroke and providing urgent referrals to higher centres using the stroke protocol.
TEACHING AND LEARNING ACTIVITIES

Total session time: 90 minutes

Activity 1. Introduction to stroke: 10 minutes

Step 1. Write the words “cardiovascular” and “cerebrovascular” on a flip chart. Ask participants if they see a similarity between the two words and what do they think it means.

Facilitator’s note: [cerebro means “related to the brain”, vascular means “related to the blood vessels”].

Step 2. Present the powerpoint slides with the following contents:

- definition and type of stroke
- burden and risk factors of stroke
- neurovascular anatomy of brain.

Activity 2. Steps for clinical and neurological work-up for suspected stroke: 15 minutes

Step 1. Ask the participants whether they know anyone who has had a stroke and survived.

What symptoms did this person have?

- Did this person or the family know that he or she was having a stroke?
- Did this person get treatment immediately?
- Did the stroke change the person’s life?
- How did the stroke affect the life of the family members?

Step 2. Give participants time to share their stories and ask questions about stroke.
Step 3. Present the powerpoint slides with warning signs and symptoms.

**Message**

Stroke is a medical emergency. The longer the normal blood flow to the brain is reduced, the greater the chance for damage. For each minute of delay 1.2 km of nerve fibres are damaged in the affected brain. Diagnostic tests (CT/ MRI scan) should be done as soon as possible and if medicines to dissolve or treat clots are needed and available they should be started within 4.5 hours of experiencing the stroke for the greatest chance of recovery. In stroke care, the term *golden hour* is used to designate the hour immediately following the onset of stroke symptoms and the reason it is “golden” is that stroke patients have a much greater chance of surviving and avoiding long-term brain damage if they arrive at the hospital and receive treatment within that golden hour.

**Activity 3. Case studies on stroke:** 20 minutes

Step 1. Refer to the case studies below and briefly discuss on the questions that follow.

1. Sarah, a 55-year-old lady on irregular treatment for hypertension, is brought to the health centre with the complaint that she had felt a numbness in her right leg followed by difficulty in walking. She notices that her right hand is also weak. Could Sarah be having a stroke? As the health care provider (HCP), what would you ask and what examination would you do for this patient?

2. Desilva has been presented to the health centre with slurred speech and giddiness. He also feels numbness and heaviness on his left side. He feels his symptoms are due to a side-effect of his diabetes medicines and did not take the morning dose. Could he be having a stroke? As the HCP what would you tell him?

3. Maria, a 40-year-old smoker comes to the health-care worker to get some medicine because she noticed some weakness in her left hand when she awoke. She also felt that her mouth is a little deviated to one side. She is sure the weakness must be because of the position of the hand while sleeping and wanted to go back soon to finish some important work in the office. As the HCP, do you notice any warning signs of a stroke? What examination will you do and what advice would you give her?

4. Anurak presented with sudden headache and loss of consciousness. His blood pressure level is 220/100 mmHg. Would he be having a stroke? If so, what type of stroke could be suspected?
Activity 4. Practicing the use of algorithm for suspicion of stroke: 20 minutes

Step 1. Divide the participants into convenient groups and ask them to discuss the algorithm

Management of suspicion of acute stroke in primary health centre (PHC)

Patient with symptoms of suspected stroke

History: risk factors
Time of onset of symptoms
Examine (FAS)

Suspicion of acute stroke

No

Yes

Treat as per diagnosis

Yes, maybe ≤ 4.5 hrs

Yes, maybe > 4.5 hrs to 3 days

Yes, onset of symptoms 4 days to 7 days

Onset of symptoms > 7 days

Activate emergency services/ arrange ambulance for immediate transfer

High risk patient (recurrent TIA or patient on anticoagulant therapy)

Assessment by specialist in < 1 week

Transfer to hospital with stroke unit/neurology services

Actions till transfer:
Make, patient lie down on the side with their head supported
Loosen any restrictive clothing that could cause breathing difficulties.
Check respiratory function, heart rate, BP, check glucose & O₂ saturation if feasible.
If sugar is ≤60 mgs give intravenous 50% dextrose

Transit Ischaemic Attack (TIA): The neurological symptoms and signs has resolved by the time of the visit and usually does not last for more than one hour.

STROKE: Possible TIA or stable stroke of at least 48 hours’ evolution. It includes patients who come when the symptoms have already resolved and they have lasted for <24 hours (susicion of TIA) and patients with stroke who are stable and come to the health centre, 48 hours after the onset of symptoms.
Step 2. Discuss the management of the following case scenarios using the algorithm for suspicion of acute stroke.

**Scenario 1:** A 60-year-old male smoker presents himself to the health centre with complaints of weakness in the left side of the body. He says it started with a feeling of numbness two hours ago and now he feels some difficulty while talking as well. Develop a management plan for this patient using the management algorithm for suspicion of acute stroke.

**Scenario 2:** A 50-year-old diabetic female comes to the health centre for a check-up of her blood sugar. She states that she had sudden onset weakness of left arm with slurring of speech three days ago. She didn’t come then because she recovered very soon and felt quite normal since. What are the steps in the management of this patient using the management algorithm for suspicion of acute stroke?

Step 3. Ask the participants to refer to workbook for case studies

**Additional case studies**

**Case 1: Presentation to a Primary health centre (PHC)**

**History:**
A 52-year-old male was found (by his relative) to have sudden trouble speaking, and difficulty in moving his right arm and leg with drooping of right side of the face at 11 a.m. He is brought to the PHC at 12 noon. He has a history of high blood pressure and blood sugar in the past but is on medication irregularly.

**Examination:**
His BP was 180/100 mmHg with a heart rate of 98/min. On examination there was drooping of right side of the face with deviation of angle of mouth to the left side. He was not able to move his right arm and leg and his speech was not clear.

**Clinical diagnosis:** Acute stroke: right hemiplegia (face, arm and leg weakness) with dysarthria.

**Management:**
Call ambulance service and transfer the patient to a district hospital with CT scan facility or a stroke centre with facilities for thrombolysis treatment. In PHC apart from the BP measurement a quick blood sugar test can be done. This is to exclude hypoglycaemia (low sugar) which can present like stroke.

**Explanation:**
This patient’s clinical symptoms are right facial droop, paralysis of right side of body and dysarthria. The acronym “FAST” (F-face, A-arm, S-speech and T-time) is a simple test to find out whether a patient has a stroke or not. This is the most common presentation of stroke.

This patient needs an urgent brain CT scan to exclude intracerebral haemorrhage. If there is no haemorrhage and the patient is in the 0–4.5 hours window period he may be eligible to receive intravenous recombinant tissue plasminogen activator (IVtPA). Hence the patient has to be transferred to a centre with these facilities.
Case 2: Presentation to a PHC

History

A 55-year-old lady presents with sudden headache, vomiting, giddiness and loss of balance on walking for two hours. She has a history of high blood pressure and high cholesterol. She was taking medications regularly till one week ago.

Examination

Her BP was 190/100 mm Hg and the heart rate was 101/minutes. On clinical examination she was not able to sit because of severe giddiness. Examination of eye movements showed nystagmus and her speech was not clear. She became less responsive to questions during the examination.

Clinical diagnosis: Acute stroke (probably cerebellar or posterior circulation stroke)

Management

Establish an IV access. Call 108/100 ambulance service and transfer the patient to a district hospital with CT scan facility or a stroke centre with facilities for thrombolysis treatment. In PHC apart from the BP measurement a quick blood sugar testing can be done. This is to exclude hypoglycaemia (low sugar) which can present like stroke.

Explanation

This patient’s clinical symptoms are headache, vomiting, giddiness and imbalance. These symptoms are suggestive of a stroke affecting the posterior part of the brain such as cerebellum and medulla.

This patient needs an urgent brain CT scan to exclude intracerebral haemorrhage. If there is no haemorrhage and the patient is within the 0–4.5 hours window period he may be eligible to receive intravenous recombinant tissue plasminogen activator (IV tPA). Hence the patient has to be transferred to a centre with these above facilities.

Activity 5. Follow-up care and secondary prevention of stroke at PHC: 20 minutes

Step 1. Start with the following statement.

One out of 4 people who recover from their first stroke will have another stroke within 5 years. Two types of medicine are commonly given to prevent a second stroke.

Anticoagulants. These medicines are blood thinners that prevent the blood from clotting and causing a stroke.

Antiplatelet agents. Platelets are blood cells that help the blood to clot, when blood vessels are injured. Antiplatelet medicines prevent platelets from causing a clot in blood vessels.
**Step 2. Ask the groups to discuss the secondary prevention of stroke in the following cases.**

**Case 3: Presentation to a PHC (secondary prevention of stroke and long-term care)**

**History**

A 60-year-old male developed left-side weakness of the face, arm and leg one month ago. He was admitted in a district hospital and was diagnosed to have an ischemic stroke based on the CT scan. He was found to have high blood pressure, high blood sugar and high cholesterol during the admission. He was discharged after one week. He was able to stand with support at the time of discharge and was unable to lift his left arm. He was able to swallow and take food orally.

He comes to the PHC for his post-one-month follow-up. His current medications are tablet aspirin 75 mg daily, tablet amlodipine 5 mg daily, tablet metformin 500 mg twice a day and tablet atorvastatin 10mg per day. His relatives reported that he has lost interest in speaking to others and cries frequently. He also repeatedly tells his relatives that he will not improve and fears another stroke soon.

**Examination**

His BP is 160/90 mmHg and HR was 82/minute and regular. His blood sugar was 120 mg/dl. On examination he is able to lift his left upper limb but the grip is still weak. He needs support with a stick for walking. He also has drooping of the left side of face.

**Clinical diagnosis:** Ischaemic stroke with residual left-side hemiparesis and post-stroke depression

**Management**

- Tab aspirin 75 mg per day, increase tab amlodipine to 5 mg twice a day, and continue tablet atorvastatin 10 mg per day and tab metformin 500 mg twice a day. He is advised to take the pills regularly
- He is advised to reduce salt intake in his diet and not to eat food rich in fat, sugar and high carbohydrates
- He is counselled that he is improving from the stroke and is started on tab sertraline 50 mg daily for depression
- He is advised to continue active and passive exercises suggested by the physiotherapist.

**Explanation**

This patient had an ischaemic stroke one month ago and he is recovering. He has residual left hemiparesis but has developed symptoms of depression. Post-stroke depression is common which needs to be addressed since it can hamper the stroke recovery.

He is advised about diet, medications (compliance) and encouraged to continue physiotherapy

His BP medication tablet amlodipine is increased since his BP is not under control. He needs control of BP, blood sugar, cholesterol to prevent another stroke. Antiplatelet drug (aspirin) has to be continued.
**Case 4: Presentation to a PHC (secondary prevention of stroke and long-term care)**

*History:* A 48-year-old male developed sudden imbalance, loss of consciousness and vomiting six weeks ago. He was admitted in a district hospital immediately after his symptoms and his BP was 220/120 mmHg at the time of admission. His CT scan head showed a haemorrhage in the left cerebellum. He had a history of high blood pressure for seven years and didn’t take medications. He had a ST elevated myocardial infarction (STEMI) years ago and was on irregular treatment. He remained in the hospital for three weeks before being discharged.

*Examination*

His BP is 130/80 mmHg and HR was 90/minute and regular. On examination he is able to walk with a walking stick and is unsteady without support. His current medications include tablet telmisartan 40 mg daily.

*Clinical diagnosis:* Haemorrhagic stroke with residual ataxia; hypertension, coronary artery disease (CAD).

*Management*

- He is advised to continue tablet telmisartan 40 mg daily.
- He is advised to take the pills regularly.
- He is started on tablet aspirin 75 mg daily for CAD.
- He is advised to reduce salt intake in his diet and not to eat food rich in fat and carbohydrates.
- He is advised to continue gait therapy suggested by the physiotherapist.

*Explanation*

This patient developed cerebellar haemorrhage. The risk factor for stroke was uncontrolled hypertension. In addition he has a previous history of CAD. His BP is under control but he is not on antiplatelet therapy for CAD. His stroke happened six weeks ago it is relatively safe to start him on antiplatelet therapy even though he has had brain haemorrhage. He is advised about diet, medications (compliance) and encouraged to continue gait therapy.

**Case 5: Presentation to a PHC (secondary prevention of stroke and long-term care).**

*History*

An 85-year-old year old male developed sudden weakness in the right side of the body with inability to speak six months ago. He was managed in a medical college hospital and was diagnosed to have ischaemic stroke. He had a history of high blood pressure. He was discharged after 15 days. He remained disabled and needed support for all activities of daily living. He used to cry frequently after his stroke and had lost interest in watching TV. He was able to swallow and eat food with the left hand. Sometimes he had urinary and faecal incontinence.

*Examination*

His BP was 140/80 mmHg and HR was 72/minute and regular. On examination he was in a wheelchair and not able to speak or move the right side of his body.

His current medications include tablet amlodipine 5 mg twice a day and tablet aspirin 75 mg once a day.
**Clinical diagnosis:** Ischaemic stroke with residual right-side hemiplegia and aphasia, along with depression.

**Management**

- He is advised to continue tablet amlodipine 5 mg twice a day and tab aspirin.
- He is started on tablet sertraline 50 mg once a day.
- He is advised to reduce salt intake in his diet and not to eat food rich in fat and high carbohydrates.
- His relatives are advised few home care tips:
  - During sleep he has to be made to change sides every two or three hours to avoid having bed sores.
  - Soft materials such as pillows must be placed under his bony prominences when he sleeps.
  - Help him to time his bladder emissions, faecal incontinence and use diapers at night.
  - Passive exercises should be done every day for a few hours to prevent joint contractures.

**Explanation**

This patient probably had a severe ischaemic stroke and has severe disability. He has not made any recovery since the time of the stroke. Besides medications he needs long-term care at home. The home care must help prevent bed sores, develop bladder control and assist with passive exercises. This will prevent long-term complications of stroke such as bedsores and urinary infections.

**Practical exercise:** Ask participants to role play the FAST tool assuming they are conducting stroke awareness in a community near the health facility.

**Activity 6. Promoting stroke awareness to community:**

20 minutes

**Step 1. Review the Ludhiana model of stroke prevention in community in northern India.**

The Ludhiana model: A successful model of how frontline health care workers can identify stroke patients and organize referrals in the rural community: The frontline health care workers (ASHAs, ANMs, anganwadi workers) in 94 villages of Ludhiana district were trained by research staff to recognize stroke patients in the rural community. If the patient is in the golden hour of 4.5 hours the health care workers request the relatives to call 108 ambulance and the patients reach the government district hospital/CMC hospital where CT scan facility and clot dissolving drug is available. Subsequently the health care workers are being trained to monitor the BP and blood sugar levels of patients regularly with the provision of medicines in PHCs.

**Step 2. Compare the similarity and dissimilarity of the model with the services available in your communities. Propose a community level intervention on stroke prevention.**
1. Which of the following is a warning sign of stroke?
   (a) gradual weakness of body
   (b) facial droop
   (c) drooling of saliva
   (d) stammering of speech.

2. Which of the following is not a type of stroke?
   (a) ischaemic
   (b) haemorrhagic
   (c) TIA
   (d) epilepsy.

3. What is the leading risk factor for stroke?
   (a) smoking
   (b) physical inactivity
   (c) hypertension
   (d) diabetes.

4. If you come across someone with sudden loss of speech and weakness in the right upper limb, what would you do?
   (a) consult a local healer
   (b) refer to a local hospital
   (c) refer to a hospital with CT scan
   (d) give antithromolytic agent and refer.
Background Information

Definition and types of stroke

Acute cerebrovascular diseases or strokes are the consequence of an alteration of blood flow in the brain, which causes a transient or permanent deficit in the functioning of one or several areas of the brain. The brain, like all parts of the body, needs oxygen which it gets from blood. When blood flow to the brain is cut off or reduced, oxygen supply is depleted and brain cells in the immediate affected area begin to die. The symptoms that follow are referred to as a stroke.

Types of stroke

Strokes are divided into two categories depending on the cause. There can either be a blockage called an ischaemic stroke or a bleed called a haemorrhagic stroke. It is important to identify the type of stroke since treatment varies according to the type.

1. Ischaemic stroke: The majority of strokes (about three in five) are blockages. Blockage stroke or ischaemic stroke is commonly caused by a build-up of fatty materials inside the blood vessels which prevents blood from flowing freely. This fatty deposit may lead to a clot which blocks the blood supply just in the case of a heart attack. This is why a stroke can be termed as a “brain attack”. A clot can form in the brain or it can travel from other parts of the body, most commonly from the blood vessels in the neck. Clots can also travel from the heart, which may occur when one has an irregular heartbeat called atrial fibrillation.

2. Haemorrhagic stroke (bleeding stroke) happens when a blood vessel bursts suddenly causing blood to leak in or around the brain. In this kind of stroke, blood in the brain can lead to a swelling of the brain which in some cases requires surgery. Bleeding stroke is most commonly seen among people with high blood pressure.

3. Transient ischaemic attack (TIA) Sometimes stroke symptoms completely disappear in less than 24 hours. This is called a mini-stroke or a transient ischaemic attack (TIA). Often, symptoms last for a short time and then disappear. When a TIA occurs, the artery either becomes unblocked after a short time or a new path opens up and blood flow becomes normal. Just as in a full-blown stroke, if a TIA is suspected, one must go to hospital immediately. This is because the TIA is a warning sign that one is at high risk of having a full stroke.

Warning signs for stroke

Since the brain controls the whole body, the symptoms of a stroke can be wideranging depending upon which part of the brain is affected. A stroke has few classic early warning signs. The word “stroke” comes from the idea of receiving a strike or a blow. Most of these signs appear suddenly. A person may be suspected to be suffering from a stroke in the presence of one or more of the following signs:

- sudden numbness or weakness of the face, arm or leg, especially on one side of the body
- sudden confusion, trouble in speaking or understanding (slurring or not being able to think of or form words)
- sudden trouble in seeing in one or both eyes (blurred or blocked vision)
- sudden trouble walking, dizziness or loss of balance
- sudden severe headache which may be accompanied by altered consciousness

**Risk factors for stroke**

<table>
<thead>
<tr>
<th>Non-modifiable risk factors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Incidence of stroke doubles every 10 years from the age of 55 onwards.</td>
</tr>
<tr>
<td>Gender</td>
<td>More frequent in women (probably due to larger number of older women).</td>
</tr>
<tr>
<td>Family history</td>
<td>Family history associated with a greater risk of stroke.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Modifiable risk factors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior stroke</td>
<td>Risk of a recurrent ischaemic stroke is high the first year after having suffered a TIA.</td>
</tr>
<tr>
<td>Alcohol, tobacco, drugs</td>
<td>A high consumption of alcohol, consumption of tobacco/drugs increases risk.</td>
</tr>
<tr>
<td>Sedentary</td>
<td>Physical activity is associated with a lower risk of vascular episodes.</td>
</tr>
<tr>
<td>Obesity</td>
<td>General and abdominal obesity are associated with an increased risk of stroke.</td>
</tr>
<tr>
<td>High blood pressure (BP), diabetes mellitus (DM), metabolic syndrome, dyslipidemia</td>
<td>High BP is the most important risk factor together with age. Diabetes and metabolic syndrome also increase the vascular risk. Cholesterol levels are associated with vascular risk although the relationship with stroke is more controversial.</td>
</tr>
<tr>
<td>Oral contraceptives, Hormone Therapy</td>
<td>Both oral contraceptives and hormone therapy increase the risk.</td>
</tr>
<tr>
<td>Cardiac causes of stroke</td>
<td>Atrial fibrillation is a risk factor, especially in people over 75, with high BP, cardiac insufficiency, DM or prior ischaemic stroke. In patients with no other risk factors, the probability of stroke is 2% a year. In acute myocardial infarction (AMI), stroke is presented as a complication in 0.75%–1.2% of cases. Pathologies with left ventricular ejection fraction below 30% also present a higher stroke risk. Mechanical heart valve prostheses present a high risk of thrombosis, while the biological ones present a lower risk. The presences of other valvular diseases are also associated with a greater risk.</td>
</tr>
<tr>
<td>Asymptomatic stenosis of carotid artery</td>
<td>The risk of stroke is situated at 2%–3% per year and 5% for the most serious stenosis.</td>
</tr>
</tbody>
</table>
Prevention of stroke

The best treatment for stroke is prevention – 80% of strokes are preventable.

People can do much to reduce their risk of stroke, even though some risk factors such as age and being male or female obviously cannot be controlled. Everyone should check their blood pressure, blood sugar and cholesterol levels and treat these conditions as advised by a doctor. People who smoke should quit; people who drink heavily should reduce alcohol intake; and people who do not exercise regularly should start. A person who has had a previous stroke is at risk of having another one. One should eat healthy, be more active, and follow the doctor’s advice for medicines and other lifestyle changes including giving up tobacco and alcohol products.

Several types of medicine help prevent stroke, and your doctor may advise you to take one or more of them depending on the risk factors:

- Blood pressure-lowering medicines might be needed if blood pressure is high.
- Cholesterol-lowering medicines might be needed if blood cholesterol is high and by those who already have had a stroke irrespective of cholesterol levels.
- Insulin and oral diabetes medicines might be needed for persons with diabetes to reduce high levels of blood sugar.

Two types of medicine are commonly given to prevent a second stroke:

- Anticoagulants: These medicines are blood thinners that prevent the blood from clotting and causing a stroke.
- Antiplatelet agents. Platelets are blood cells that help the blood clot when blood vessels are injured. Antiplatelet medicines prevent platelets from causing a clot in blood vessels.

How does stroke affect the person?

The human brain has different areas that control how the body moves and feels. When a stroke damages a certain part of the brain, that part may not work as well as it did before. Depending on the part of the brain that is affected and how much brain tissue is damaged, a person might have problems with seeing, sleeping, moving parts of the body, controlling the bladder or bowels, fatigue, seizures, memory and depression.

A person who has had a stroke and has survived may have physical problems or other disabilities from the stroke. He or she may recover from the stroke completely or only partially. While 50% to 70% of stroke survivors regain some functional independence, 15% to 30% are seriously disabled. But given time, the brain can slowly recover and regain previously lost ability. This is why stroke rehabilitation is very important. A person who has had a stroke is likely to face emotional problems in addition to the physical ones.

Disabilities caused by stroke include:

- Paralysis or inability to move (usually limited to one side of the body).
- Vision problems.
- Memory loss.
Difficulty talking or understanding what others are saying.

Change in behaviour, such as asking question after question over and over.

A stroke survivor may cry easily or may have sudden mood swings, often for no clear reason. A person can suffer from depression and have mood swings as a result of the stroke-related brain damage.

A person may also react with anger, depression, or withdrawal as damage from the stroke changes him or her from an independent person on whom others have leaned for support to a highly dependent person who feels that he or she is a burden to family and friends.

Rehabilitation, depending on the disability, may require the support of many different specialized health professionals such as physiotherapists, speech therapists, etc.

The four main types of therapy include:

- Physical therapy: A person who has a problem with movement (for example, cannot walk, cannot move the arms, or cannot keep his or her balance) will need physical therapy.
- Occupational therapy: A person who has lost memory or knowledge will need occupational therapy to relearn activities basic to daily living, such as bathing and dressing.
- Speech therapy: A person who has difficulty with speech (for example, who cannot move the tongue, lips or jaw properly to form words) will need speech therapy.
- Emotional support therapy: People who have a stroke often become depressed, anxious, frustrated or angry. They can be helped with “talk therapy” (talking to a mental health care provider or social worker). Depression can also be treated with medicines.

What community health care workers can do to help community members who are at risk for stroke or have had a stroke:

- Help people make better lifestyle choices:
  - Teach people to stop smoking, get regular physical activity, and lose weight (if they are overweight).
  - Help people choose a diet with plenty of vegetables, fruits and whole grain products that is low in fat, saturated fat, trans fat and cholesterol.
  - Help community members learn how to reduce their intake of sodium.

Learn and teach relaxation exercises.

- Educate and remind people to keep their blood pressure and blood sugar under control, importance of regularly taking their blood pressure, cholesterol lowering and diabetes medicines.
- Educate community on the warning signs of stroke, and to act in time if someone is having a stroke.
For those who have had a stroke, all the above plus:

- Link patients to follow-up care (stroke rehabilitation) for vision, memory, speech or movement problems.
- Link patients to community resources if they need support to obtain medicines or other supplies, equipment and services.
- Support people who are worried about their disability and dependence on others.
- Support caregivers by providing information, linking them to caregiver resources, and helping them communicate with members of the health-care team.
- Encourage stroke survivors and their caretakers to get help for managing stress and depression.
- Educate stroke survivors and their caretakers on the importance of regularly taking their medications (blood thinners, blood pressure and cholesterol and diabetes medicine) in order to prevent another stroke.
Prevention of stroke in primary health care

Activity 1: Step 2

Definitions

- Cerebrovascular disease: abnormality of the brain resulting from pathological process of the blood vessels

- Stroke (WHO): rapidly developing clinical signs of focal or global disturbance of cerebral function lasting more than 24 hours or leading to death with no apparent cause other than that of vascular origin

- Transient ischaemic attack (TIA): rapidly developing clinical signs of focal or global disturbance of cerebral function lasting less than 24 hours.
Types of strokes

- Ischaemic (~85%)
- Intracerebral Haemorrhage (~10%)
- Subarachnoid Haemorrhage (~5%)

Stroke burden (GBD:2013)
- In 2013, 25.7 million stroke survivors (71% with Ischaemic stroke, IS), 6.5 million deaths from stroke (51% died from IS), 113 million DALYs due to stroke (58% due to IS)
- 10.3 million new strokes (67% IS).

Different lobes of brain
Prevention of stroke in primary health care
### Modifiable risk factors

- Hypertension
- Diabetes
- Coronary heart disease
- Smoking
- Alcohol
- Obesity
- Hyperlipidemia
- Rheumatic heart disease.

### Non-modifiable risk factors

- Race/ethnicity
- African Americans - 3 fold risk
- Higher prevalence of HT, DM, CAD, low socioeconomic status
- Hispanic Americans
- Heredity
- Paternal & maternal history of stroke - increased risk among the offspring
- Age
- Male gender.

### Activity 2: Step 3
Stroke warning signs and symptoms

- Sudden weakness in one side of the body
- Sudden numbness in one half of the body
- Sudden difficulty in speaking or understanding speech
- Sudden trouble seeing in one or both eyes
- Sudden loss of consciousness
- Sudden trouble walking, dizziness or loss of balance
- Sudden severe headache with no known cause.

Test to assess stroke

- Facial weakness - Ask the person to smile showing their teeth? Does one side of the face droop or is the person’s smile uneven or lopsided?
- Arm weakness - Ask the person to raise both arms. Can the person raise both arms? Does one arm drift downward?
- Speech problems - Can the person speak clearly and understand what you say? Ask the person to repeat a simple sentence and see whether the person able to correctly repeat the words.

Facial drop

Is there drooping of one side of face?
Arm weakness

Is there weakness in one arm?

Slurring Speech

Is the speech slurred or strange?

I ca... sp..

Acute stroke care pathway