

Programme: MSc Public Health and
Social Care in Practice
Module Name: Community Care
and Management of Long Term
Condition

Module code: LCHS7003

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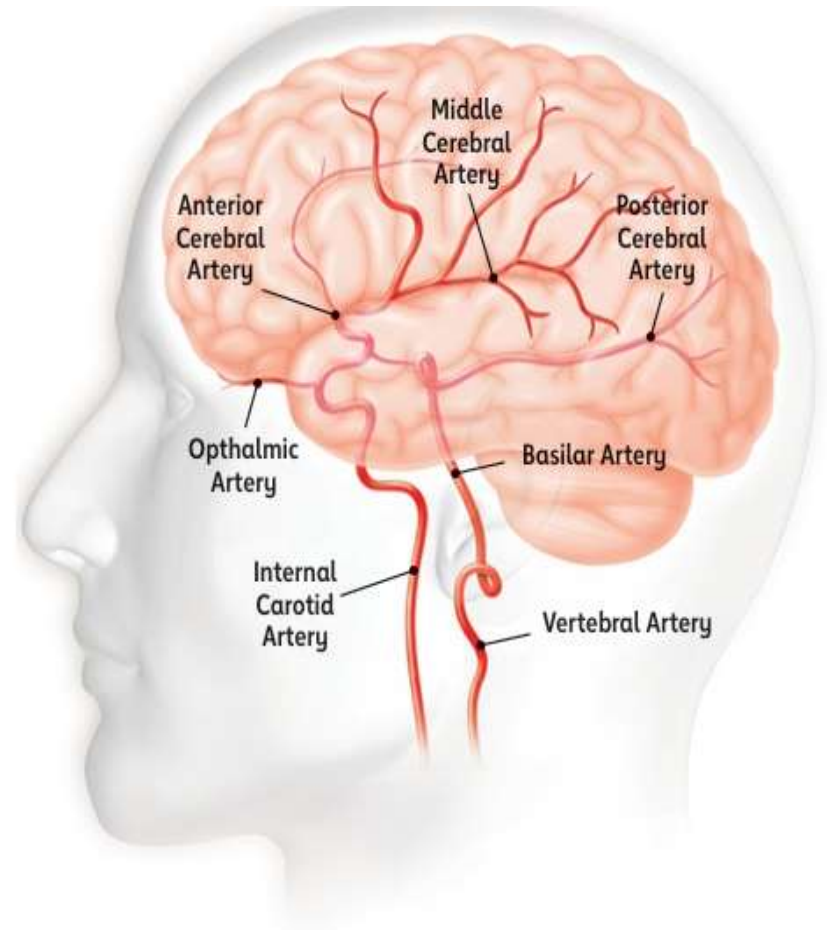
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WHAT IS STROKE?

- Blood vessels that carry blood to the brain from the heart are called **arteries**. The brain needs a constant supply of blood, which carries the oxygen and nutrients it needs to function. Particular arteries supply blood to the particular areas of the brain. A **stroke** occurs when one of the arteries to the brain is either blocked or ruptured. As a result, a part of the brain doesn't receive enough oxygen-rich blood, causing brain cells to begin dying.

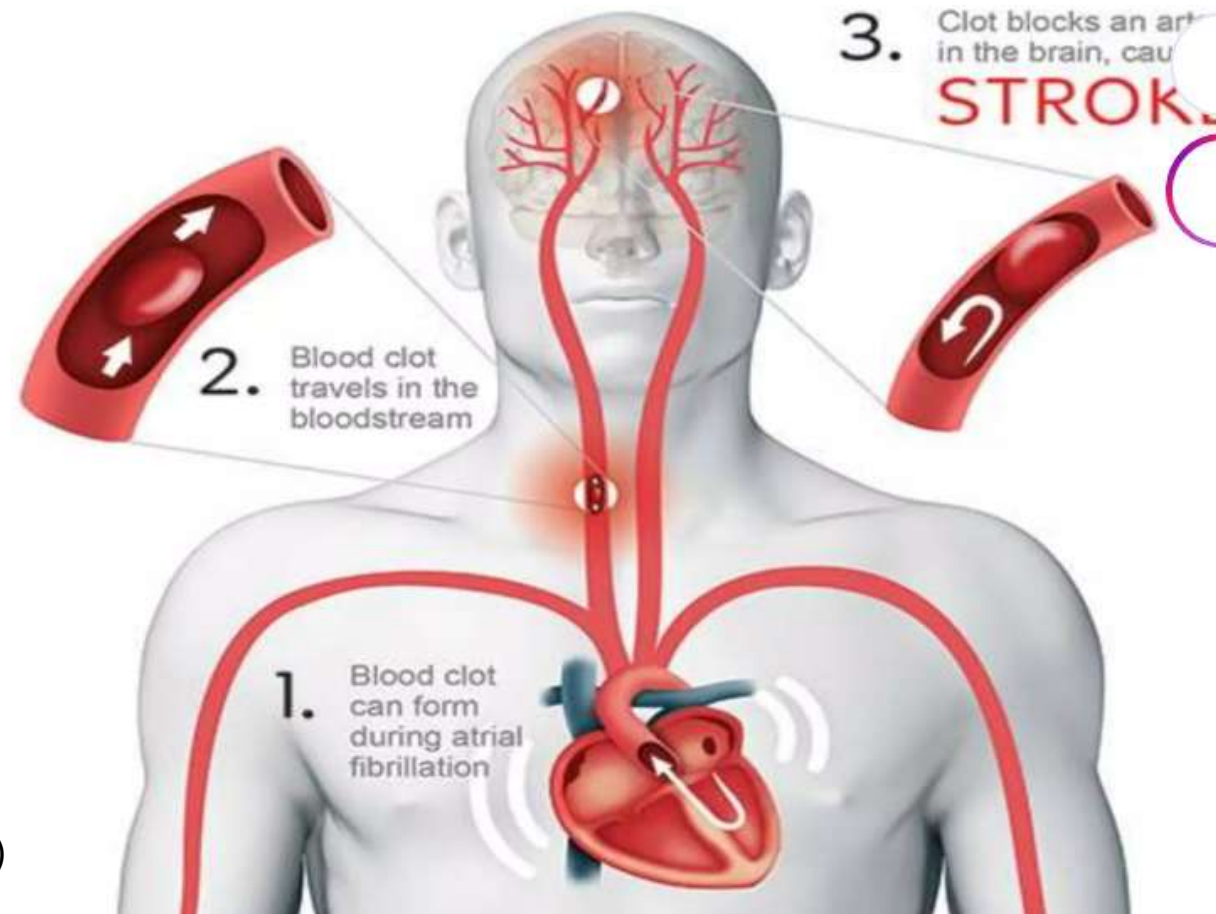
(AHA-2020)



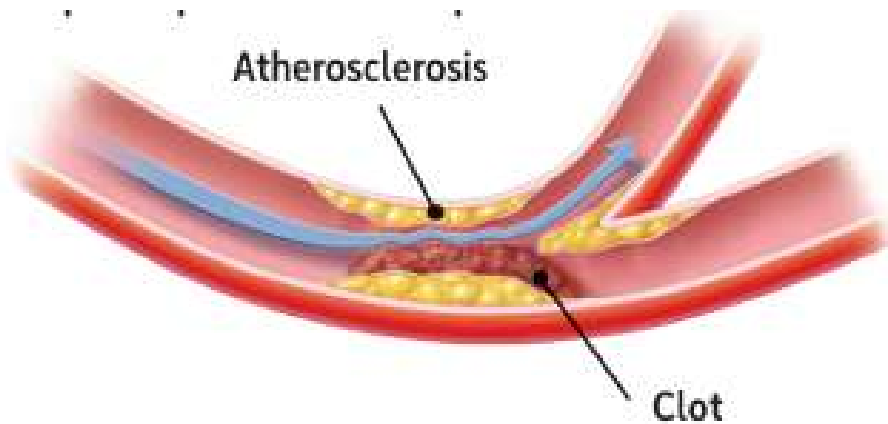
DEFINITION

- A stroke is a rapid loss of brain function due to the disturbance in the blood supply to brain. A stroke occurs when a blood flow to the brain part stops. It is called as a 'brain attack'.
- A stroke is a medical emergency and treatment must be given as soon as possible.

(AHA-2026)



BLOCKAGE OF THE BLOOD FLOW



- A stroke can happen when an artery that supplies blood to the brain becomes blocked by a buildup of fatty deposits (plaque) or by a blood clot. This blockage reduces blood flow to the brain, preventing it from getting enough oxygen and nutrients. This image shows **atherosclerosis**, which is the hardening and narrowing of the arteries caused by the buildup of cholesterol and plaque.

(AHA-2020)

STROKE SIGNS/SYMPTOMS

- Stroke signs/symptoms vary depending on what type of stroke it is, what area of brain is damaged and how severe it is
- As said previously stroke signs/symptoms come on very suddenly, although some

Times new symptoms occur over the course of hours or days . They can include:-

1. Weakness, numbness or inability to move your face, arm or leg on one side of your body
2. Blurred vision or loss of sight in one or both eyes
3. Difficulty speaking or understanding what people are saying
4. Confusion
5. Severe headache
6. Dizziness and/or losing your balance
7. Difficulty swallowing
8. Shortness of breathe
9. Loss of consciousness

(Stroke Association 2021)

Recognising the signs of a stroke

F ACE	Face weakness Sudden weakness or numbness of the face. Ask the person to smile. Does one side of the face droop?
A RMS	Arm weakness Sudden weakness or numbness of the arm or leg on one side of the body. Ask the person to raise both arms. Does one arm drift downwards?
S PEECH	Speech problems Sudden difficulty speaking or understanding speech. Ask the person to repeat a simple sentence. Are the words slurred? Can he/she repeat the sentence correctly?
T IME	Time to call 999 If the person shows any of these symptoms, time is important. Call 999 or get to the hospital fast. Brain cells are dying.

There are two main types of stroke



1. Ischaemic:
due to a blocked blood vessel in the brain.



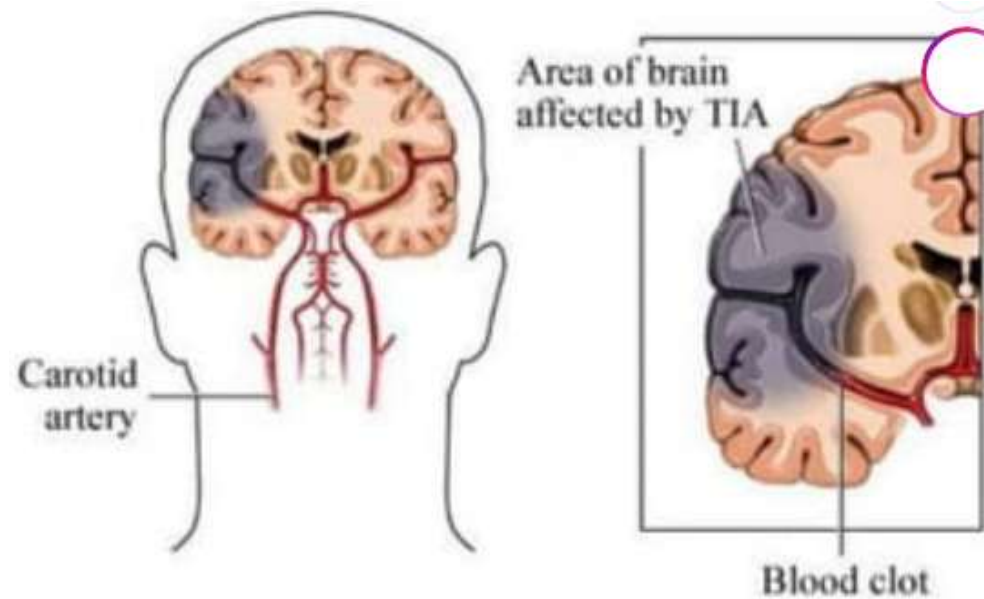
2. Haemorrhagic:
due to bleeding in or around the brain.

Ischaemic stroke is often referred to as a clot.
Haemorrhagic stroke is often called a bleed.

(helpline@stroke.org.uk)

TRANSIENT ISCHEMIC ATTACK

- TIA(mini stroke) causes the same sign and symptoms as a stroke, but they only last for a short time. It happens when a blockage temporarily reduces blood flow to the brain. So, there is no permanent brain damage. Even though the symptoms go away, a TIA is a medical emergency and should be assessed by a healthcare provider because it may be a warning sign of a future stroke.



(www.stroke.org)

CAN STROKE BE PREVENTABLE?

Yes. Most stroke can be prevented by adopting a healthy lifestyle. A stroke is a medical emergency and prompt treatment is essential. People can lower their risks by controlling high blood pressure, avoiding smoking, eating a nutritious diet that is low in saturated and trans fats, staying physically active, poor circulation, maintaining healthy body weight, managing diabetes effectively and avoiding alcohol consumption.

STROKE FACTS:



Stroke is a
"brain attack."



Although stroke is
**more common
after age 55,**
it can also happen
at any age and at
any time.



**Leading cause of
adult disability:**

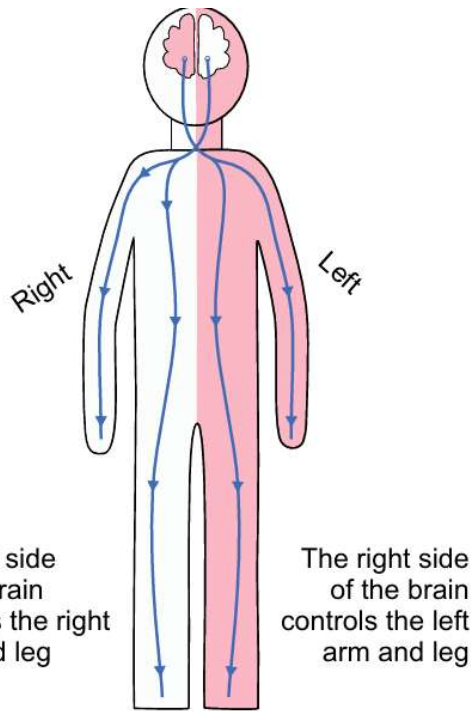
- Some people who have a stroke will make a full recovery.
- But more than 2/3s of survivors will have some type of disability.



**Every 40
seconds,**
someone in
the U.S. has
a stroke.



**Two million
brain cells**
die every
minute during
a stroke.



How does our brain function?

Right Brain

If the stroke occurs in the brain's right side, the left side of the body (and the left side of the face) will be affected,

which could produce any or all of the following:

- Paralysis on the left side of the body
- Vision problems
- Quick, inquisitive behavioral style
- Memory loss

Left Brain

If the stroke occurs in the left side of the brain, the right side of the body will be affected, producing some or all of the following:

- Paralysis on the right side of the body
- Speech/language problems
- Slow, cautious behavioral style
- Memory loss

Non modifiable risk factors

- **Increasing age.**

- Stroke can occur at any age.
- Usually incidence rates rise sharply with age.

- **Gender:**

- incidence of stroke is higher in **men** than in women in all age classes.

- **Family history:**

- stroke is not hereditary, however some of the risk factors may be hereditary such as high blood pressure, diabetes or abnormally high cholesterol.

- **Prior stroke.**

- Someone who has had a stroke is at higher risk of having another one.

([https://www.cdc.gov/stroke/types of stroke.htm](https://www.cdc.gov/stroke/types%20of%20stroke.htm))

Blood disorders

- Certain blood disorders are risk factor for stroke.
- A **high red blood cell count** makes clots more likely, raising the risk of stroke.
- **Sickle cell anemia** increases stroke risk because the “sickled” cells stick to blood vessel walls and may block arteries

(<http://emedicine.Medscape.com>)

BRAIN INJURY AFTER A STROKE

Depending on which area of your brain is affected by a stroke, you can have changes to your daily abilities. (ASA, 2025)

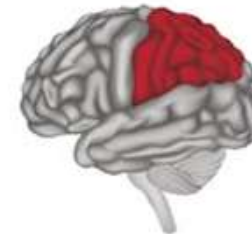
FRONTAL LOBE



Injury in the Frontal Lobe can cause:

- Changes in mood/personality, behaviors, emotions, and impulses
- Difficulty paying attention, problem solving, completing tasks, and speaking
- May experience muscle weakness, lack of coordination, and difficulty moving

PARIETAL LOBE



Injury in the Parietal Lobe can cause:

- Difficulty determining left from right, eye to hand coordination, focusing/attention, naming/drawing objects, and problem solving
- May become unaware of things on one side of the body or ignore things/people on one side of your body.

TEMPORAL LOBE



Injury to the Temporal Lobe can cause:

- Difficulty with your long-term memory, recognizing someone, understanding words, and paying attention
- Aggressive behaviors and experience inappropriate emotions

OCCIPITAL LOBE



Injury to the Occipital Lobe can cause:

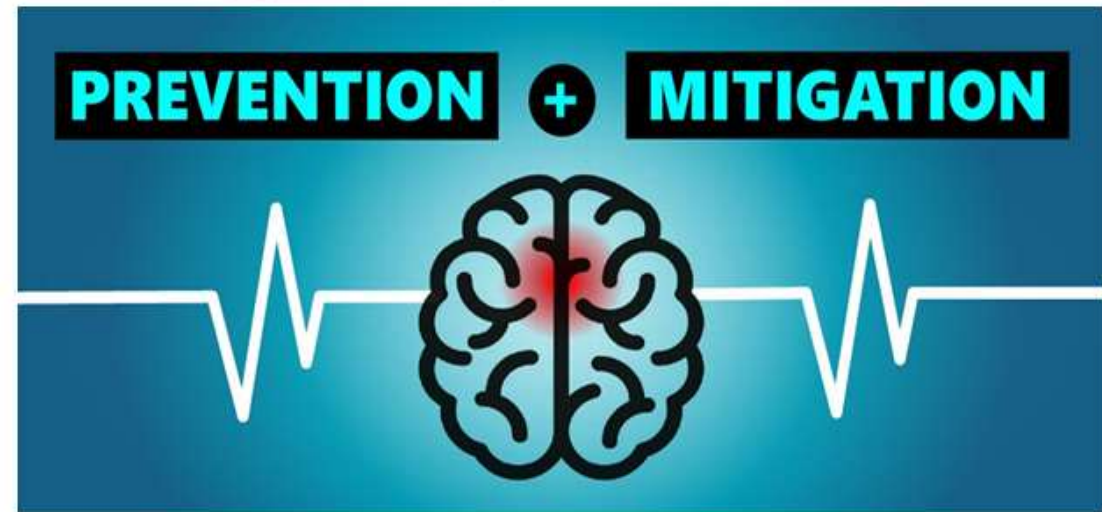
- Difficulty with your vision, naming colors, reading, writing, or drawing.
- Experiencing hallucinations

PREVENTING A SECOND STROKE

To prevent a second stroke, focus on monitoring your health and work with your provider to address any underlying conditions that may increase your stroke risks.

Steps to take to help prevent a second stroke (CDC, 2024) (ASA, 2025):

- Know the cause of your stroke.
- Manage your high blood pressure.
- Control your cholesterol.
- Reduce your blood sugar.
- Be active, eat better, and lose weight.
- Stop smoking.
- Be involved in your treatment plan decisions.
- Take medications as prescribed by your provider, such as:
 - Aspirin or Clopidogrel to prevent blood clots
 - Anticoagulation therapy



(HealthAware, 2025)

DIAGNOSIS

- **CT scan:** First-line test to rule out acute hemorrhage.
- **MRI:** Gold standard for early and precise detection of acute brain ischemia
- **PET scan**
- **FAST test:** Face drooping, arm weakness, speech difficulty, time to call.
- **NIHSS scale:** Quantifies neurological deficit severity.
- **History & timing:** Establishes exact symptom onset for acute therapy windows.

(53(7), e282–e361. [1, 2]-2022)

(50(12), e344–e418-2019)

PREVENTION AND MANAGEMENT OF COMPLICATIONS

- Proper management of stroke complications enhances both immediate and long-term pt outcomes
- Stroke related complications are broadly classified into **medical(general)** and **neurological** complications
- Based on time of onset, complications can be categorized as:
 1. **Acute complications:** occurs within 7 days after stroke
 2. **Subacute complications:** develop after 7 days following the stroke

by Chindo Mallum(Management of complications by Chindo Mallum)

PRIMARY AND SECONDARY PREVENTION

- A- Antiplatelet and Anti-coagulants
- B- Blood pressure lowering medication
- C- Cholesterol lowering, cessations of smoking
- D- Diet
- E- Exercise
- **Antiplatelet Therapy:** Aspirin, clopidogrel, or dual antiplatelet therapy (DAPT) for non-cardioembolic events.
- **Anticoagulation:** Direct oral anticoagulants (DOACs) or warfarin for cardioembolic strokes secondary to atrial fibrillation.
- **Risk Factor Modification:** Aggressive LDL reduction via high-intensity statins and precise glycemic/hypertension management. [1, 2]

REHABILITATION

- Focuses on improving

1. Mobility
2. Shoulder pain
3. Activity of daily living
4. Swelling
5. Spasticity
6. Communication
7. Swallowing

MEDICAL INTERVENTION

1. Skeletal muscle relaxants
2. Anti depressant

(www.world-stroke.org)

MANAGEMENT OF ISCHEMIC STROKE

Stroke rehabilitation and Specialized care:

- Effective rehabilitation for stroke patients involves early **physical therapy, occupational therapy** and **speech therapy**.
- It also focuses on educating pts and their families about the pt's neurological impairments while preventing complications related to prolonged immobility such as **pneumonia, deep vein thrombosis(DVT), pulmonary embolism, pressure ulcers** and **muscle contractures**.
- The primary objective of rehabilitation is to help pts regain independence and safely return home by following an individualized, progressive rehabilitation programme. Additionally, **restraint therapy** (restricting the movement of the unaffected limb) has been shown to improve recovery from **hemiparesis** after a stroke.

(amanda.jones@sth.nhs.uk)

EVALUATION OF THERAPEUTIC OUTCOMES

- The most common reasons for clinical deterioration in stroke patients include:
 1. Extension of the original lesion in the brain
 2. Development of cerebral edema and raised intracranial pressure
 3. Infection(urinary and respiratory tract)
 4. Venous thromboembolism
 5. Electrolyte abnormality and rhythm disturbance
 6. Recurrent stroke

(prevalence of stroke in India-2017 August)

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