# Stroke

## *Executive summary*

## Introduction

A stroke is the sudden loss of neurological function resulting from death of brain tissue from vascular occlusion or rupture.

Stroke is the second leading cause of death globally and the number one cause of functional disability. It is a feared complication of hypertension, diabetes mellitus and heart disease.

The gold standard for stroke treatment includes an early CT scan to rule out bleeding followed by thrombolysis. These are not readily available in The Gambia but should not prevent our patients from receiving the best possible care that is available.

### Target users

* Doctors
* Nurses

### Target area of use

* Gate clinic
* Outpatient department
* Ward

### Key areas of focus / New additions / Changes

This guideline covers the diagnoses and management of stroke. It updates the previous guideline on acute stroke care.

Patients suspected to have suffered a stroke should be sent from the Gate Clinic to the ward for urgent review by a doctor.

The ROSIER score can assist the doctor in diagnosis if the presentation is unclear.

For patients presenting in Keneba, refer after emergency care.

Ideally, patients should have a non-contrast cranial CT scan to rule out haemorrhage. Treatment on the ward involves maintenance of hydration, management of intracranial pressure, antithrombotics (if ischaemic), DVT and pressure ulcer prophylaxis, physical therapy and other supportive care. In addition, patients with suspected SAH require sedation, analgesia, laxatives and possible early neurosurgical referral.

Post-discharge care should be planned in consultation with the patient and/or caregivers. This may include palliative care in patients with severe functional disability.

## Limitations

CT scan and rehabilitation services may not be readily accessible to most patients. Thrombolysis for stroke is currently unavailable in The Gambia.

## Presenting symptoms and signs

Stroke typically presents as sudden, rapidly peaking loss of neurological function. A history of sudden limb weakness, slurring of speech or visual deficits suggests a stroke or, if resolved within 24 hours, a transient ischaemic attack. Rarely, a stroke may present with only paraesthesia, balance problems or language problems.

Ask for head trauma within the past 3 months.

If any of coma, neck stiffness, seizures, diastolic blood pressure > 110 mmHg, vomiting, or headache is also present, the patient is more likely to have had a haemorrhagic type of stroke. A history of sudden severe headache and neck stiffness is in keeping with subarachnoid haemorrhage.

A history of only loss of consciousness or seizures suggests an alternative diagnosis.

## Examination findings

Assess airway, breathing and circulation. Check the observations (HR, BP, RR, O2 saturations, Temperature).

Assess consciousness, then orientation in time, place and person. Observe for confusion and difficulty producing or understanding speech.

Check for neck stiffness which suggests subarachnoid haemorrhage.

Assess the pupils, eye movements and facial symmetry. If patient is conscious, ask them to protrude their tongue.

Assess tone, power and reflexes across the limbs.

Observe the gait if the patient is able to walk.

Listen over the heart for rhythm, murmurs and over the neck for carotid bruit.

## Investigations

* Blood glucose as soon as possible (Both hypo- and hyperglycaemia are stroke mimics. They also worsen stroke outcome)
* CT Scan of the brain without contrast to rule out haemorrhage. This should be done same day if stable or next day (if available and affordable).
* Full Blood Count
* ESR (helps exclude vasculitis in younger patients)
* Electrolytes, Urea and Creatinine
* Urinalysis
* ECG (rule out atrial fibrillation)
* CXR
* Sepsis screen (if fever develops)
* Clotting profile (if previously on warfarin)

## Aim to have acted on the results for the above tests (excluding cultures) in less than four hours.

## Management

### Management in Gate Clinic

All patients with features of a possible stroke (recent onset of facial weakness, limb weakness or speech problems) should be referred immediately to the ward for urgent review by a doctor.

### Management on the Ward

Assessment:

Use the ROSIER (Recognition of Stroke in the Emergency Room) score if uncertain of the diagnosis of stroke

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| --- | --- |
| **Feature** | **Score** |
| Loss of consciousness or syncope | -1 |
| Seizure activity | -1 |
| Asymmetric facial weakness\* | +1 |
| Asymmetric arm weakness\* | +1 |
| Asymmetric leg weakness\* | +1 |
| Speech disturbance\* | +1 |
| Visual field defect\* | +1 |

\*of recent sudden onset or noticed on waking from sleep

If the total ROSIER score is less than 1, a diagnosis of stroke is unlikely.

Consider other diagnosis if the patient is young, has gradual progression over days, is febrile or has papilloedema.

Treatment:

Starting at admission:

1. Hydrate initially with **IV normal saline**.
   1. Nothing by mouth if dysarthric. Start on NG tube. Repeat **swallow test** daily for conscious patients.
2. If there are signs of **raised ICP,** give IV furosemide 40 mg bolus and IV mannitol 0.5 g/kg given over 20 minutes 4 - 6 hourly.
3. Antithrombotics: If CT scan rules out haemorrhage, commence **oral aspirin** at 300 mg daily for 4 weeks. For patients without a CT scan but unlikely to have haemorrhagic stroke, start aspirin on day 2 at 150 mg daily for 2 weeks. Reduce to 75 mg daily subsequently.
4. For suspected vasculitis (e.g raised ESR), consider starting 1 mg per kg prednisolone.
5. For stroke patients presenting in Keneba, commence emergency care and refer immediately.

Starting after 24 hours:

1. **DVT prophylaxis** with **heparin** after 2 days for immobile patients if hemorrhage is ruled out or unlikely.
2. **Early mobilization** of the patient is encouraged but minimize within first 24 hours.
3. **Statins** should be commenced after 48 hours if patient is able to obtain the drug.
4. Treat **recurrent seizures** with oral carbamazepine or valproate.

Ongoing supportive care

1. **Supplemental Oxygen** should be given for patients with oxygen saturations below 94%.
2. Keep **systolic BP** below 180 mmHg with oral antihypertensives. Consider IV labetalol if systolic blood pressure is >220 mmHg
3. Maintain **blood glucose** between 7.7 – 10 mmol/l. Hypoglycaemia should be identified and treated promptly. Hyperglycaemia may require insulin therapy as discussed in the Diabetes Mellitus guideline.
4. Maintain normal **body temperature**. Fever >37.5°C should be treated with paracetamol. Search for possible infections and do sepsis screening. Avoid indwelling catheters if feasible, otherwise monitor daily.

SAH:

1. For suspected or confirmed subarachnoid haemorrhage,
   1. Keep systolic BP below 130 mmHg with a calcium channel blocker but avoid hypotension
   2. Lactulose suspension to keep stools soft (prevents straining and raised ICP)
   3. Oral diazepam for light sedation
   4. Analgesics
   5. Consider early referral for neurosurgical management especially for unconscious patients or sudden deterioration

### Discharge planning and Post-Discharge Care

Discharge planning should involve the patient, their caregivers at home and the clinical team. Stroke patients should be discharged home when agreed-upon achievable goals of inpatient care have been reached and the home environment made safe. Patients with severe residual brain injury from stroke may require palliative care.

Assess functional independence at discharge

Plan safe care at home e.g sturdy arm-chairs resting against walls, wheelchairs, relocate patient to a ground-floor bedroom, install hand-holds on walls.

Explain stroke risk factors and prescriptions to the patient and caregivers.

Patients with persistent swallowing difficulties may be fed with thickened fluids if tolerated. For patients requiring nasogastric feeding, discuss feasibility of a PEG tube insertion.

Patient should be referred for physical and psychological rehabilitation services. Regardless of clinical recovery, patients with stroke should be advised not to drive for at least one month post-discharge.

Schedule first follow-up visit for 4 weeks after discharge but advise caregivers to present early if they notice any deterioration in the patient’s state.

## Key Issues for Nursing care

Monitor vital signs every 4 hours. Call the doctor if:

* Temperature > 37.5
* Blood glucose < 6 mmol/l or > 10 mmol/l
* Systolic blood pressure < 140 or > 180 mmHg
* GCS drops by 1 point compared to last observation
* Oxygen saturation < 95%

Nurse in 30 degrees head up position with head in midline

Two-hourly turning and surveillance for pressure ulcers if unconscious/immobile

Suction oral cavity and airway as needed if unconscious

Strict fluid charts

Strict bed rest if SAH is suspected

## References

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