



Clinical Guidelines

Subject: **STROKE**

Responsible Organisation:	States of Jersey Ambulance Service (SoJAS)
Document Type:	Clinical Guidelines
Document Reference:	SoJAS/Strokeguidelines/210222/1
Applicable to staff group:	All Ambulance Staff and Combined Control Officers EFRs, CFRs, Voluntary Agencies
Version:	Version 1 Final Version: Yes/No
Authors:	Senior Ambulance Officer - Mr J Inglis
Linked Documents	Stroke and transient ischaemic attack in over 16s: diagnosis and initial management. NICE guideline [NG128]
Senior Responsible Officers:	Dr V. Patel Mr J. Inglis
Ambulance Leadership Team Ratification Panel:	Chief Ambulance Officer – Mr P.Gavey Medical Director – Dr V. Patel Senior Ambulance Officer – Mr J. Inglis Senior Ambulance Officer (Int) – Mr G. Kynman
Approval Date:	10/06/22
Issue Date:	16/06/22
Review Date:	6 Months

Signed on behalf of the ALT Ratification Panel

Dr V. Patel - Medical Director

Date: 15/5/2022

Mr J Inglis : SAO

Date : 20/5/2022

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1. Statement

The States of Jersey Ambulance service (SoJAS) is committed to providing the best possible care to patients suffering Stroke or Transient Ischaemic Attacks (TIAs). These guidelines are intended to provide guidance for those individuals attending a cerebrovascular emergency/event within the Pre-Hospital arena.

2. Scope

This instruction applies to all SoJAS staff who are tasked to respond or witness a patient with Stroke/TIA symptoms. These guidelines also apply to all staff deployed by and representing SoJAS: including Combined Control Officers, Emergency First Responders (EFRs), Community First Responders (CFRs) and Voluntary agencies (St John & Normandy rescue).

3. Stroke and TIA, UK Ambulance Clinical Practice Guidelines 2021 (JRCALC 2021).

Stroke is a major health problem in the UK & Jersey. Improving care for patients with Stroke and TIA is a key Island priority.

Stroke is defined as a clinical syndrome, of presumed vascular origin, typified by rapidly developing signs of focal or global disturbance of cerebral functions lasting more than 24hours or leading to death.

Cerebrovascular disease is the third leading cause of disability in the UK. Approximately, 85% of strokes are caused by cerebral infarction resulting from ischaemic stroke, 10% by primary intracerebral haemorrhage (ICH) and 5% by subarachnoid haemorrhage. The risk of recurrent stroke is 26% within 5 years of a first stroke and 39% by 10 years.

Distinguishing between the aetiology of a stroke is not feasible in the pre-hospital setting.

3.1 Acute Stroke

Acute Stroke is a medical emergency. For patients with thrombotic Stroke, treatment with thrombolytic therapy is highly time dependent. **To determine suitability for treatment, patients must undergo a brain scan, therefore, patients need to be transferred to hospital as rapidly as possible once the diagnosis is suspected.**

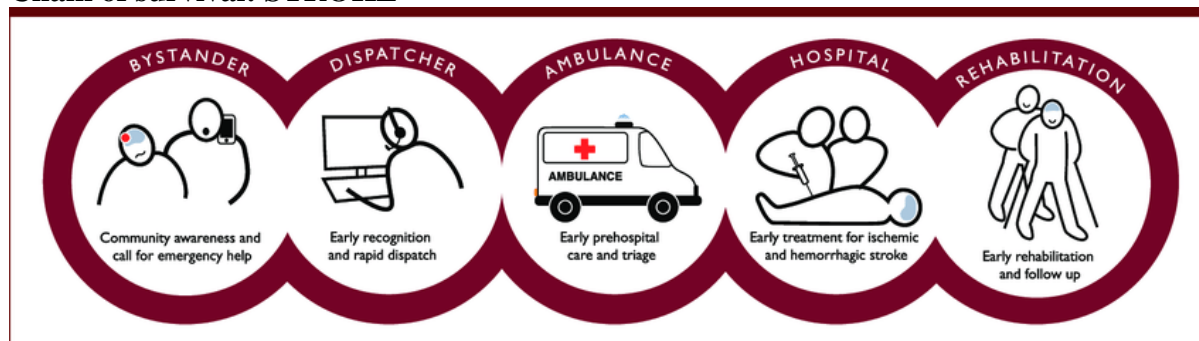
It is important to remember that thrombolysis is not the only clinical management strategy that has proven to benefit Stroke patients. Admission for early specialist care is known to be lifesaving and to reduce disability, even if thrombolysis is not indicated. Some centres (not

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Jersey but hopefully in the future we will link up with a tertiary centre in England) now offer mechanical embolectomy, a minimally invasive surgical treatment to using endovascular devices to revascularise intracerebral arteries. They are used routinely up to six hours after the onset of stroke symptoms (sometimes even 12 hours).

Chain of survival: **STROKE**



The vast majority (95%) of people with stroke present in the community setting. Public information campaigns (FAST campaign) have raised awareness of stroke symptoms and encourage early call for help using the 999 system. Research has helped inform and guide procedures in emergency call taking to recognise stroke symptoms as early and as accurately as possible to facilitate an appropriate response.

Reducing time from symptom onset by calling for help and speeding up pre-hospital assessment and reducing on scene time, can expedite admission to definitive care. This reduces overall time to treatment and helps improve patient outcomes. Time is of the essence in suspected acute stroke. Time is brain.

Signs and Symptoms of Stroke can include:

- Sudden onset numbness or weakness of the face, arm or leg: especially one side of the body
- Sudden onset new confusion, trouble speaking, difficulty understanding speech or difficulty swallowing.
- Sudden onset visual disturbance in one/both eyes, blurred or double vision, loss of visual field.
- Sudden onset trouble walking, changes in gait, loss of balance or lack of coordination.
- Sudden onset severe headache resulting in a blinding pain/photophobia unlike anything experienced before (unlike their usual pattern of headaches).

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- Sudden onset of dizziness, nausea, or vomiting.
- Reduced level of consciousness, or altered mental status including transient loss of consciousness or behavioral changes
- Acute onset focal neurological deficit, or witnessed acute focal neurological deficit which has since resolved, or new onset focal seizures
- Acute onset neck pain or neck stiffness with no known cause.
- Locked in syndrome (Full body paralysis below the neck).

The most sensitive features associated with diagnosing Stroke in the prehospital setting are facial weakness, arm and/or leg weakness, and speech disturbance. This said, the **FAST** test correctly identifies approximately 75% of hyper acute Strokes, meaning that in the region of 25% (1 in 4) patients that are deemed FAST negative are diagnosed with Stroke in hospital. This patient group traditionally has worse mortality and morbidity rates and receive sub optimal care due to difficulty in diagnosing.

Stroke patients presenting FAST negative during assessment in the hyper acute phase, frequently have a range of subtle symptoms that are difficult to identify. It has been shown that patients with acute onset of ataxia and/or a Visual field deficit often with sudden onset of Vertigo and vomiting are strongly suspected to have suffered acute posterior or cerebellar Stroke. The Mnemonic **AVVV** (Ataxia, Visual Disturbances, Vertigo, Vomiting) may be helpful to support patient examination. These patients need conveyance to hospital for further assessment and management.

Stroke in Children

Childhood stroke can happen at any age. There are more than 400 children diagnosed with stroke every year in the UK. Be aware that the following non-specific symptoms may occur in a child presenting with stroke, in addition to the signs & symptoms detailed above:

- Nausea or vomiting
- Fever
- Neck pain

Acute focal neurological signs may be absent, and attention should be given to parental or young person concerns about the presentation of unusual symptoms.

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Stroke 'Mimickers'

There may be other non- neurological causes for some of the symptoms listed above, referred to as 'stroke mimics' which are more common than acute stroke:

- Seizures
- Syncope
- Sepsis
- Hypoglycaemia
- Migraine
- Decompensation of previous stroke functional disorders

About 40% of suspected strokes are eventually diagnosed as a stroke 'mimic'. However, it can be extremely difficult to distinguish a stroke mimic from a true stroke in the pre-hospital environment.

3.2 Transient Ischaemic Attack (TIA)

Transient ischaemic attack (TIA) is defined as Stroke symptoms and signs that resolve within 24 hours. It is thought to be caused by inadequate cerebral or ocular blood supply as a result of low blood flow, thrombosis or embolism associated with diseases of the blood vessels, heart or blood.

TIA is associated with a very high risk of stroke in the first month and up to one year after the event.

During the first few hours of a patient's symptoms, it is not possible to differentiate between a stroke and a TIA. Therefore, patients presenting with any facial weakness, speech impairment, loss of focal cerebral or ocular function should immediately be conveyed to hospital and investigated as **suspected stroke**.

4. Patient Assessment at scene

Methodical approach with assessment of Airway-Breathing-Circulation-Disability and correct as appropriate.

Evaluate if the patient has any **TIME CRITICAL** features – these may include:

- Any major ABC problem
- Altered level of consciousness
 - Any unilateral neurological deficit – including paresthesia and visual field deficit

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- Positive **FAST** test (FACE-ARMS-SPEECH-TIME)
- Positive **AVVV** examination (ATAXIA-VISUAL-VERTIGO-VOMITING)

All patients presenting with Stroke symptoms should have their Blood Pressure, Blood Glucose and Glasgow Coma Scale recorded.

FAST Test

A deficit in **any one** of the three criteria is sufficient for the patient to be identified as ‘FAST positive’. There is no requirement for all 3 FAST criteria to be present for the patient to be deemed FAST positive, a positive FAST test should be considered a **TIME CRITICAL** condition.

FACE	ARMS	SPEECH	TIME
Does the patient have unilateral drooping or an inability to smile?	Ask the patient to raise their arms to 90° if sitting or 45° if lying and hold for 5 seconds with their eyes closed. Does one arm fall or slowly drift away indicating a unilateral weakness? In the absence of arm weakness, sudden onset of unilateral leg weakness can be a FAST-positive sign.	Is there a new onset of slurred speech, inability or incorrect use of words during conversation? Show the patient some everyday objects and ask them to name them i.e., pens, watch, cup — is a correct response given? Are they able to verbalise?	Record the onset time of symptoms. When was the patient last seen well? or if the patient has woken up with Stroke symptoms document “wake-up” Stroke

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AVVV

When assessing a patient with potential symptoms of **posterior** circulation stroke, the mnemonic **AVVV** can provide a framework for examination.

Posterior circulation Stroke primarily affects the Cerebellum, the area of brain responsible for motor control, coordination, and cognition.

Injury to the cerebellum can cause a change to a patient's gait, induce ataxia, impact upon the fourth cranial nerve, prompt symptoms of vertigo and cause sudden vomiting.

For a patient to be deemed to have a positive **AVVV** assessment, the patient **must** have:

- Acute, sudden onset of Ataxia **and/or**
- Acute, sudden onset of Visual field deficit.

There is no requirement for all four of the AVVV symptoms, however Ataxia and/or visual field deficit **must** be present. Association with the symptoms of sudden onset of Vertigo and/or Vomiting should increase suspicion of Posterior Stroke.

However, it is worth noting that without the presence of ataxia and/or visual field deficit, Stroke is unlikely to be the primary differential diagnosis and further investigation is required.

Ataxia

Ataxia is a lack of co-ordination of muscles that commonly affects balance, co-ordination, and speech.

Ascertaining patients with ataxia often involves thorough clinical examination and detailed history taking. Patients will frequently report falls since onset of symptoms, stumbling when mobilising or collision with objects.

There are several appropriate neurological assessments that help to evaluate a patient's co-ordination, offering a potential indication of ataxia.

Some patients may only have truncal ataxia (unsteady gait or wide-based 'drunken' gait as a sign of cerebellar or posterior circulation stroke). Strong consideration must be made around the appropriateness of mobilising a patient with suspected ataxia to assist examination, and this should only be undertaken if deemed safe to do so following a dynamic risk assessment which must be documented.

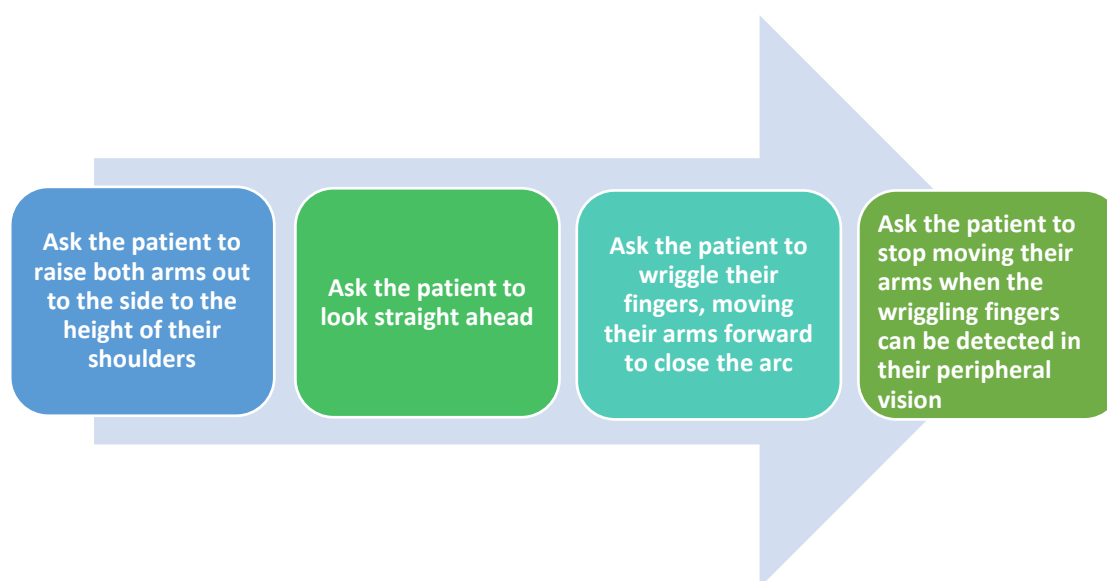
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Visual Field Deficit

To ascertain a visual field deficit the patient may require a detailed history taking with symptoms often described as a barrier in vision or commonly report the misjudging of proximity of everyday objects such as doorways or furniture.

An example of a simple examination can be undertaken to aid identification of a visual field deficit:



A **positive** visual field deficit is when the peripheral vision differs greatly from one side to another or when the arc has closed sufficiently for the wriggling fingers to be seen in the central line of vision.

Vertigo

Vertigo is commonly described as the feeling of objects or the room spinning around the patient or spinning motions occurring within the patients' head. Often vertigo has a simple and/or benign origin, however suspicion must be applied in patients presenting with multiple symptoms associated with Stroke.

Vomiting

Vomiting is clearly a common symptom across many disease pathologies and is likely to be the least useful of the **AVVV** symptoms, particularly if used in isolation.

It is important to note that vomiting is more sensitive than a feeling of nausea when consideration is made to posterior Stroke.

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5. MANAGEMENT – PRE-HOSPITAL

Assess <C>ABCD	If TIME CRITICAL : correct problems and convey without delay Manage as per JRCALC guidelines
GCS	Assess GCS on unaffected eye Eye & Motor assessments may be more readily assessed if speech is affected
RESP RATE	Measure & record respiratory rate
PULSE	Measure & record pulse
OXYGEN SATURATION	Monitor the patients SpO2 & administer Oxygen to achieve saturations of >94% if the patient presents as hypoxaemia on air. (As per JRCALC Guidelines)
BLOOD PRESSURE & FLUIDS	Measure & record BP. Administer fluids if needed in accordance with JRCALC guidelines. I.V access is not essential unless the patient requires specific interventions as it may delay transport to hospital.
BLOOD GLUCOSE	Measure & record blood Glucose for hypo/hyperglycaemia. Treat in accordance with JRCLAC Guidelines. Remember: Hypoglycaemia can mimic a stroke
TEMPERATURE	Measure & record temperature en route to Hospital
NEWS2	Record as per JRCALC guidelines
ECG	DO NOT DELAY transfer to Hospital to record a 12-lead ECG. A 12 lead ecg is not necessary for stroke patients unless there are specific reasons (i.e., concurrent chest pain) Patients should have continuous 3 lead cardiac monitoring en route to capture arrythmias, specifically AF.
ASSESS PAIN SCORE	Assess, record, and give appropriate analgesia if required. Exercise caution over Oral medication.
TRANSFER	A suspected acute stroke is a TIME CRITICAL emergency. Every effort must be made to minimise on-scene time Provide a PRE-ALERT in the form of an ISHICE to ED Convey under Blue light conditions Patients with suspected acute stroke should remain NIL by mouth until they have a swallowing assessment in hospital- ensure suctioning is available for aphagia patients to protect airway from secretions.
DOCUMENTATION	Document all clinical findings and rational for treatment or exclusions. Include TIME OF ONSET and time of PREALERT

KEY MESSAGE:

TIME CRITICAL
RAPID ASSESSMENT & MINIMISE TIME ON SCENE
THINK FAST and AVVV
PRE-ALERT & BLUE LIGHT CONVEYANCE

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6. Development & Consultation Schedule

Consultation Schedule

Name and Title of Individual	Date Consulted
Mr P. Gavey - Chief Ambulance Officer	23/02/22
Dr. Vishal Patel - Medical Director	23/02/22
Mr J. Inglis - Senior Ambulance Officer	23/02/22
Mr G. Kynman - Senior Ambulance Officer (Interim)	23/02/22
Mr J. Hamon – Head of EP & Operational Support	23/02/22
Mr G Saunders – Interim Head of Operations	23/02/22

Name of Committee/Group	Date of Committee / Group meeting
SoJAS Ambulance Leadership Team (Policy & Procedures Ratification)	10/06/2022

7. Implementation Plan

Action	Responsible Officer	Timeframe
Share with all SoJAS staff and provide link to TEAMS-Share site and L-DRIVE Ensure document shared with Voluntary agencies-CFRs and EFRs	J.Inglis	June 2022

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8. Change Record log

It is the responsibility of SoJAS to check the Department intranet to ensure that the most recent version / issue of this document is being referenced.

Responsibilities: -

It is the responsibility of all SoJAS staff to:

- Access read understand and apply this Guideline
- Attend any mandatory training pertaining to the Guideline

It is the responsibility of the department to:

- Ensure the Guideline is reviewed as required in line with trust and national recommendations
- Ensure the Guideline is accessible to all relevant staff.

Date	Change	Comment	Authorised