New Zealand Out-of-Hospital Acute Stroke Destination Policy
Northland and Auckland Areas

This policy is for the use of clinical personnel when determining the destination hospital for patients with an acute stroke in the out-of-hospital setting in the Northland and Auckland areas of New Zealand. It has been developed by the Northern Region Stroke Network in conjunction with the National Stroke Network and the Ambulance Sector.

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New Zealand Out-of-Hospital Acute Stroke Destination Flowchart: Northland and Auckland Areas

Does the patient have signs or symptoms of an acute stroke?

NO

Stroke is unlikely, treat appropriately without using this policy.

YES

Can the patient be transported to a stroke hospital within four hours of the onset of symptoms?

NO

Transport to the most appropriate hospital.

YES

Transport to the most appropriate stroke hospital:

- Auckland City Hospital.
- North Shore Hospital.
- Middlemore Hospital.
- Waitakere Hospital (0800–1600, Mon to Fri).
- Whangarei Hospital (0800–2200, Mon to Fri).

Notify receiving staff en route to hospital and provide the following information:

- FAST results and
- Time of onset of symptoms and
- NHI number (if known).

On arrival at hospital:

- Leave the patient on the ambulance stretcher during handover.
- Convey the patient to the CT scanner (accompanied by hospital personnel) if requested to do so, provided this does not cause a significant delay.
Acute Stroke Destination Policy: Northland and Auckland Areas

Additional information

Introduction

- This policy is for the use of personnel in the out-of-hospital setting (for example ambulance and primary care personnel), when determining the transport destination for patients with an acute stroke and should be read in conjunction with the New Zealand Ambulance Sector Clinical Procedures and Guidelines.
- The goal of this policy is to optimise outcomes for patients with acute ischaemic stroke by minimising the time to administration of fibrinolytic therapy if this is indicated.
- All patients with signs or symptoms of stroke who can reach a stroke hospital within four hours of the onset of symptoms may be eligible for fibrinolytic therapy and should be transported directly to a stroke hospital without delay, whenever it is feasible and safe to do so.
- Although this policy has primarily been designed for the out-of-hospital setting, the principles within it could be used by personnel in the in-hospital setting.

Stroke hospitals

- The term ‘stroke hospital’ is used to describe a hospital that has the appropriate facilities and staff to assess patients with acute stroke and provide fibrinolytic therapy.
- The role of receiving staff in stroke hospitals is to rapidly assess patients for their suitability to receive fibrinolytic therapy and to initiate fibrinolytic therapy without delay when it is indicated.
- The following hospitals are designated as stroke hospitals:
  - Auckland City Hospital.
  - Middlemore Hospital.
  - North Shore Hospital.
  - ¹ Waitakere Hospital (0800–1600, Monday to Friday).
  - ² Whangarei Hospital (0800–2200, Monday to Friday).

¹ Note: Waitakere Hospital only has personnel to provide fibrinolytic therapy if the patient arrives in the Emergency Department between the hours of 0800–1600, Monday to Friday. If the patient is going to arrive outside these hours or it is a public holiday:
  - Personnel should perform additional screening using the PASTA tool (see appendix one). Personnel must phone the on call hyper-acute stroke doctor at Auckland City Hospital on 021 XXX XXX to discuss the patient if the answer to all of the questions in the PASTA tool is ‘yes’ or ‘uncertain’. The patient will only be transported to Auckland City Hospital if the patient is accepted by the on call hyper-acute stroke doctor or if the hyper-acute stroke doctor does not answer after two calls.
  - The patient should be transported to Waitakere Hospital if the answer to any of the questions in the PASTA tool is ‘no’ or if the patient is not accepted by the on call hyper-acute stroke doctor at Auckland City Hospital.

² Note: Whangarei Hospital only has personnel to provide fibrinolytic therapy if the patient arrives in the Emergency Department between the hours of 0800–2200, Monday to Friday. If the patient is going to arrive outside these hours or it is a public holiday, the patient should be transported to the most appropriate hospital in Northland.
Determining the most appropriate stroke hospital

- A patient with an acute stroke who can be transported to a stroke hospital within four hours of the onset of symptoms should usually be transported to the nearest stroke hospital. However, clinical judgement should be used and if a patient is located an approximately equal distance between stroke hospitals, the patient should usually be transported to the hospital that is most appropriate for the DHB area they live in.

- A patient with signs or symptoms of an acute stroke who cannot be transported to a stroke hospital within four hours of the onset of symptoms is unlikely to be eligible to receive fibrinolytic therapy and should be transported to the most appropriate hospital (which may not be a stroke hospital), taking into account:
  - The patient’s anticipated clinical needs
  - The location of the incident
  - Where the patient lives.

Patient assessment and treatment

- Ambulance personnel will use the Ambulance Sector Clinical Procedures and Guidelines.

- Clinical assessment of the patient must include an assessment for new onset of unilateral weakness and new onset of impaired speech. The FAST test is recommended:
  - Face: ask the patient to smile and look for unilateral facial weakness.
  - Arm: ask the patient to raise both arms and close their eyes. Look for unilateral arm weakness or unilateral drift.
  - Speech: ask the patient to repeat a sentence and listen for slurring of words. Ask the patient to name several common objects and observe for difficulty naming objects.
  - Time: note the time of the onset of symptoms.

- The time of the onset of symptoms is the time at which the patient was last known to be symptom free. If the patient has woken with the signs or symptoms, then the time of the onset of symptoms is the time the patient was last known to be awake and symptom free.

- Examination for leg weakness is not part of the FAST assessment, however observing the patient walking (provided this is feasible and safe) may detect leg weakness or poor coordination. Poor coordination may result from a stroke within the cerebellum.

- Hypoglycaemia can cause signs and symptoms that mimic a stroke and these may persist for many hours following treatment. If the patient is hypoglycaemic or has received treatment for hypoglycaemia, the patient should not be treated using this policy.

- Seizures can cause signs and symptoms that mimic a stroke, particularly during the postictal phase and these may persist for many hours following the seizure. If the patient has had a seizure the patient should not be treated using this policy.

- IV access should be obtained, preferably en route to hospital.

- Receiving staff in the stroke hospital must be notified by ambulance personnel en route, providing as much warning as possible so that appropriate personnel can be notified of the patient’s impending arrival. The following information should be provided:
  - FAST results
  - Time of onset of symptoms
  - NHI number (if known).

Transport timeframes

- Four hours from the onset of symptoms has been chosen as the ‘cut off’ time for transport to a stroke hospital. This is because evidence suggests there is no benefit (and possibly harm) from administering fibrinolytic therapy after four and a half hours from the onset of symptoms.

- Utilising a four hour time window from the onset of symptoms to arrival in a stroke hospital allows an additional thirty minutes for hospital staff to assess the patient and commence fibrinolytic therapy if indicated.
Transport modes

- Transport to hospital should usually be by road ambulance.
- Transport to hospital by helicopter should be reserved for patients with the greatest potential to benefit from fibrinolytic therapy, utilising the following criteria:
  - The patient is independent and without severe comorbidities and
  - The diagnosis is clear and
  - The patient has severe weakness and
  - The patient will clearly reach a stroke hospital within four hours of the onset of symptoms and
  - Helicopter transport will clearly save more than thirty minutes compared with road transport.
- Personnel requiring advice on helicopter transport should phone personnel on the Clinical Desk within the Ambulance Clinical Control/Communications Centre on 0800 111 HELP (111 4357).

On arrival at a stroke hospital

- On arrival at a stroke hospital, ambulance personnel should leave the patient on the ambulance stretcher during handover and convey the patient to the CT scanner (accompanied by hospital personnel) if requested to do so. If a significant delay in conveying the patient to the CT scanner is anticipated, the patient should be transferred to a hospital bed.
- Once the patient has been transferred to the CT scanner, the ambulance stretcher may be removed and ambulance personnel are not required to remain with the patient.
- Exact arrangements at each stroke hospital will vary depending on locally agreed processes between stroke hospital personnel and the ambulance service. The goal of conveying the patient to the CT scanner on the ambulance stretcher is to reduce the time to fibrinolytic therapy when indicated.
Pre-hospital acute stroke triage in Auckland (PASTA)

Introduction and instructions

- Use this tool to screen patients in the Waitakere Hospital catchment area with suspected acute stroke for immediate transfer to Auckland City Hospital for possible hyper-acute stroke treatment.
- Phone the on call hyper-acute stroke doctor ASAP at Auckland City Hospital on 021 XXX XXX if all of the answers are ‘yes’ or ‘unsure’. Prior to phoning ensure that as much information as possible is available regarding the patient’s comorbidities and level of functioning.
- Follow the instructions of the on call hyper-acute stroke doctor with regard to the destination hospital. Transport to Auckland City Hospital if the on call hyper-acute stroke doctor has not answered after two calls.
- Transport the patient to Waitakere Hospital if any of the answers are ‘no’.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will the patient arrive at Waitakere Hospital outside the hours 0800–1600, or is it a weekend or a public holiday?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Is the patient aged 15 years or older?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Is the patient able to perform their activities of daily living without assistance?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Are all recordings of the patient’s blood glucose level 4–17 mmol/L?</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Are you confident the patient has not had a seizure?</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Is the patient’s best motor score greater than or equal to five?</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Is the time of symptom onset to expected arrival in Auckland City Hospital less than five hours?</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Is the total LAMS (see below) greater than or equal to three?</td>
<td>☐</td>
<td>☐</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Facet</th>
<th>Absent</th>
<th>Present</th>
<th>Drift</th>
<th>Falls rapidly</th>
<th>Normal</th>
<th>Weak</th>
<th>No grip</th>
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</thead>
<tbody>
<tr>
<td>Facial weakness</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Arm weakness</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Grip strength</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

If answered YES or UNSURE to ALL criteria

- Phone the on call hyper-acute stroke doctor at Auckland City Hospital on 021 XXX XXX to discuss the patient.
- Transport the patient to Auckland City Hospital if the on call hyper-acute stroke doctor accepts the patient or has not answered after two calls.

If answered NO to ANY criteria or the on call hyper-acute stroke doctor does not accept the patient

- Transport the patient to Waitakere Hospital.