**Summary**

The critical areas of stroke management in New Zealand where a change in practice would make an important difference to outcomes for people with stroke are:

1. **All District Health Boards should provide organised stroke services.** (see algorithm)
2. **All people admitted to hospital, where a new stroke is the main issue, should expect to be managed in a stroke unit by a team of health professionals with expertise in stroke and rehabilitation.**

In addition, all people with stroke should receive:

- **Management of their stroke using protocols derived from evidence-based guidelines**
- **Low-dose aspirin within 48 hours if CT rules out intracerebral haemorrhage and no other contraindications exist**
- **Attention to and information about secondary prevention issues, with a written care plan to minimise the risk of a further stroke. For many patients after ischaemic stroke, this will now include consideration of additional blood-pressure-lowering medication and statin treatment for lipid modification, even when blood pressure and cholesterol are within previously accepted or ‘borderline’ ranges**
- **Recognition of the cultural diversity of New Zealanders; services must be responsive to the needs of Māori and Pacific peoples**
- **Information about stroke that will, when appropriate, include advice regarding sexuality, mood, employment and driving. Information about stroke should also be provided to the person’s family/whānau**
- **Assessment for ongoing support and rehabilitation needs**
- **Follow-up by community-based rehabilitation services, stroke clinics and their family doctor according to continuing needs**
- **Information about and, if desired, long-term support from, Stroke Foundation regional services for people with a stroke and their families/whānau.** (email: strokenz@stroke.org.nz)

and

- **People presenting with transient ischaemic attacks (TIAs) or minor strokes should be assessed in a specialised clinic no later than 7–14 days after the event. They should have rapid access to a range of imaging facilities as appropriate.**

**Selected patients with stroke may receive:**

- **Treatment with intravenous thrombolysis (special criteria apply)**
- **Management in an early supported discharge programme.**
Management of stroke

Public education and awareness
- Patient/family recognises stroke or TIA
- GP / emergency services / ED

Admission
- Yes
- No

Diagnosis
- Yes
- No

Acute management
- Yes
- No

Life after stroke
- Yes
- No

Secondary prevention
- Yes
- No

Rehabilitation
- Yes
- No

Support
- Yes
- No

Review
- Yes
- No

Life after stroke: New Zealand guideline for management of stroke
**KEY TO ALGORITHM**

1. **Is admission required for this person?**
   All people with stroke should expect to be admitted unless:
   - No significant disability affecting functioning and
   - Urgent outpatient assessment by specialist stroke service available or
   - Already in appropriate institutional care or
   - Person/family prefer home care despite explanation of benefits of hospital care
   If not admitted must consider diagnosis, secondary prevention, home support and rehabilitation needs.

2. **Acute admission**
   - Admission to stroke unit or care of stroke team
   - CT within 48 h
   - Swallowing assessment within 24 h
   - Multidisciplinary team (MDT) assessment within 48 h
   - Aspirin initiation (if appropriate) within 48 h

3. **Life after stroke**
   - Person has contact information for Stroke Foundation, field officers or other support
   - Caregiver support
   - Cultural issues
   - Ongoing education about stroke
   - Appropriate advice and information on sexuality, mood, employment, driving

4. **Is diagnosis and secondary prevention an issue for this person?**
   Typically appropriate if:
   - Further stroke would have important clinical consequences and
   - Person can cooperate and comply with investigations or antiplatelet drugs and
   - If for carotid ultrasound, has significant functional recovery from an anterior circulation stroke and fit for surgery
   Typically not appropriate if terminal illness, severe dementia/disability e.g. in hospital-level care

5. **Outpatient clinic / review**
   To confirm diagnosis, assess vascular risk factors and address secondary prevention
   - Urgent outpatient assessment by clinicians knowledgeable about stroke
   - ECG and bloods at GP or ED presentation
   - Access within 1-2 weeks
   - Review by physician with special interest or expertise in stroke management

6. **Is inpatient rehabilitation required?**
   All people with stroke should expect inpatient rehabilitation by an MDT with expertise in stroke unless:
   - No significant residual disability interfering with function on MDT assessment or
   - Moderate disability (e.g. transfer with 1 person) and early supported discharge service available or
   - Already in institutional care and community rehabilitation service available

7. **Inpatient rehabilitation**
   - Admission to stroke unit or care by stroke team within a rehabilitation unit
   - Stroke-expert MDT responsible for care
   - Person-orientated goal setting
   - Daily therapy input (Mon–Fri)
   - Family and caregivers involved in rehabilitation
   - Appropriate information and support available to person and family

8. **Is person ready for discharge to the community?**
   Typically appropriate if:
   - Medically stable and
   - MDT has completed assessments of home situation and post-discharge requirements and
   - An appropriate place for discharge has been identified and
   - An appropriate plan has been agreed between MDT, person, caregivers and other agencies and
   - All necessary equipment has been provided and
   - All follow-up arrangements are in place (rehabilitation, social and GP/primary care)

9. **Community rehabilitation**
   Can be provided with equal effectiveness in the community or a day hospital

10. **Is person ready for discharge from rehabilitation?**
    Typically appropriate if:
    - Person has achieved agreed therapy goals and
    - No new goals are identified and agreed and
    - Appropriate supports are in place

**Abbreviations:**
- ECG = electrocardiogram
- ED = emergency department
- GP = general practitioner
- MDT = multidisciplinary team
- TIA = transient ischaemic attack
Stroke is a major health problem in New Zealand. Stroke management includes stroke prevention, acute care, rehabilitation and long-term support for people with stroke and their caregivers, family members/whānau and others involved in their lives.

There is overwhelming evidence that the most important intervention that can improve outcomes for all people with stroke is the provision of organised stroke services, a vital component of which is a stroke unit. Without an organised stroke service, adherence to recommendations about specific interventions is likely to have little impact on outcomes for people with stroke.

The main priority for all health funders and providers of stroke services is that people with stroke have access to organised stroke services. The priority for the consumers of that region should be to ensure that organised stroke services are available and accessible.

Grade A evidence from meta-analysis of 23 randomised controlled trials by Cochrane Collaboration Stroke Unit Trialists shows that organised stroke services save lives, reduce morbidity, reduce length of stay in hospital, and improve long-term quality of life and physical outcomes.

The evidence in favour of stroke units means that for a District Health Board with a catchment population of 100,000 which does not provide a stroke unit, approximately 6 extra patients a year will die, and approximately 10 extra will be dead or dependent at 6 months. This means an extra 230 deaths and a further 380 people dead or dependent 6 months after the stroke every year in New Zealand if organised stroke care is not provided.

The evidence suggests that for every 20 patients managed in a stroke unit, rather than a general medical ward, one person less is discharged to institutional care.

This translates to annual savings of over $250,000 per 100,000 catchment population. Much of this saving comes from avoidance of the need for institutional care for some people after a stroke.

The full guideline is available from: www.stroke.org.nz

or

www.nzgg.org.nz (along with a suite of cardiovascular disease guidelines)

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