The Stroke Guidelines in practice

Suzanne Busch and Carl Hanger
November 26, 2015
SI Stroke Education Day
Christchurch
How do we implement the guidelines?

• NZ stroke guidelines

• Inspire / enthuse you

• Suzanne
  • Acute and smaller DHBs
  • MOH targets-acute

• Carl
  • Rehabilitation
  • MOH targets-rehabilitation
## Highlighted stroke service recommendations

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>All District Health Boards (DHBs) should provide organised stroke services.</td>
<td>✓</td>
</tr>
<tr>
<td>All people admitted to hospital with stroke should expect to be managed in a stroke unit by a team of health practitioners with expertise in stroke and rehabilitation.</td>
<td>✓</td>
</tr>
<tr>
<td>Large and medium-sized DHBs should provide an acute stroke thrombolysis service for their populations.</td>
<td>✓</td>
</tr>
<tr>
<td>All DHBs should provide a transient ischaemic attack (TIA) service in accordance with the NZ TIA Guideline (2008).</td>
<td>✓</td>
</tr>
<tr>
<td>Large DHBs can provide organised stroke-specific community teams.</td>
<td>✓</td>
</tr>
<tr>
<td>Māori and Pacific participation in decision-making, planning, development and delivery of stroke services should be supported. Stroke services should work, where possible, with Māori and Pacific providers.</td>
<td>✓</td>
</tr>
<tr>
<td>Community services should be equally accessible for stroke patients under 65 years as those 65 years and over. Community services for stroke patients under 65 years should be responsive to the needs of Māori and Pacific peoples.</td>
<td>✓</td>
</tr>
<tr>
<td>Health practitioners and others providing stroke care should receive training and support in delivering culturally-competent, patient-centred care, including understanding the impact of culture on illness and rehabilitation.</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Grade description
- **A** Body of evidence can be trusted to guide practice
- **B** Body of evidence can be trusted to guide practice in most situations
- **C** Body of evidence provides some support for recommendation(s) but care should be taken in its application
- **D** Body of evidence is weak and recommendation must be applied with caution
- ✓ Consensus-based recommendations (GPP)
# Highlighted new stroke management recommendations

## Stroke recognition

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The FAST (face, arm, speech, time) message</strong> is appropriate for public awareness campaigns about both TIA and stroke – see part 3, section 2.1.</td>
<td>✓</td>
</tr>
<tr>
<td>The delivery of public awareness programmes should be tailored to specific target audiences, such as Māori and Pacific people – see part 3, section 2.1.</td>
<td>✓</td>
</tr>
</tbody>
</table>

## Thrombolysis and pre-hospital care

<table>
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<tbody>
<tr>
<td>Intravenous IPA should be given as early as possible in carefully selected patients with acute ischaemic stroke as the effect size of thrombolysis is time dependent. Where possible intervention should commence in the first few hours but may be used up to 4.5 hours after stroke onset (Wardlaw et al, 2009; Lansberg, 2009b) – see part 3, section 4.1.</td>
<td>A</td>
</tr>
<tr>
<td>Stroke patients should be given a high priority designation by ambulance services (Quain et al, 2008; Mosely et al, 2007; Lindenberg et al, 2006; Bray et al, 2005b; Devins et al, 2005) – see part 3, section 2.2.</td>
<td>C</td>
</tr>
<tr>
<td>Ambulance services should use a validated rapid pre-hospital stroke-screening tool and incorporate such tools into pre-hospital assessment of people with suspected stroke (Bray et al, 2005a; Nor et al, 2004, Kidwell et al, 2000; Kolthai et al, 1999) – see part 3, section 2.2.</td>
<td>B</td>
</tr>
</tbody>
</table>

## Secondary prevention

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low dose aspirin and modified release dipyridamole or clopidogrel alone should be prescribed to all people with ischaemic stroke or TIA taking into consideration patient comorbidities (Sacco et al, 2008) – see part 3, section 5.4.</td>
<td>B</td>
</tr>
<tr>
<td>Aspirin alone can also be used, particularly in patients who do not tolerate aspirin plus dipyridamole or clopidogrel (Antithrombotic Trialists, 2002) – see part 3, section 5.4.</td>
<td>A</td>
</tr>
<tr>
<td>Eligible, stable patients should undergo carotid endarterectomy as soon as possible after the stroke event (ideally within two weeks) (Kothwell et al, 2004) – see part 3, section 5.7.</td>
<td>A</td>
</tr>
</tbody>
</table>

## Rehabilitation and recovery

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</thead>
<tbody>
<tr>
<td>Rehabilitation should be structured to provide <strong>as much practice as possible</strong> within the first six months after stroke (Kwakkel et al, 2004) – see part 3, section 6.1.</td>
<td>A</td>
</tr>
</tbody>
</table>
Carl’s Recipe for Organised Stroke Services

• Clinical Champion
  • Find one, challenge one or become one!

• Enthusiasm for stroke
  • 1 part Passion mixed with 1 part Expertise/knowledge

• Persistence

• Patient stories

• Use the guidelines
  • They are a guide, not a stick to beat you
ACUTE STROKE CARE
Acute Services

MOH target 80% of stroke patients have to be admitted to organised stroke services
What makes an acute stroke service organised?
Population effects of stroke interventions

Langhorne P et al, Lancet Neurol 2012;11:341-
A Stroke Unit
NZ guideline definition

- is a geographically-located area where people with stroke are managed
- has staff organised into a coordinated interdisciplinary team
- has staff who are knowledgeable and enthusiastic about the management of stroke
- provides ongoing education about stroke for staff, people with stroke and caregivers
- has written protocols for the assessment and management of common problems related to stroke.
Members of an acute stroke team

Designated to stroke
(not necessarily designated to stroke exclusively):

• A stroke physician*
• A stroke nurse*
• Physiotherapist
• Occupational Therapist
• Speech and Language Therapist
• Social worker
MOH requirements for organised stroke services include

- Stroke Thrombolysis
- Rapid TIA Access
- Acute Stroke Care
- Early Stroke Rehabilitation
24/7 Thrombolysis
CODE STROKE
Rural Hospital

CODE STROKE?
Rural Hospital
CODE STROKE!
Rural Hospital

CODE STROKE!
Acute Stroke Care
Beyond the clot busting

Acute medical and nursing care

Early Rehabilitation = Complete Rehabilitation

Discharge planning
Medical Care

Diagnosis correct

Right tests in the right conditions
Right treatment at the right time
Not give the wrong treatment
Identify any complications early
Appropriate treatment of complications
Communication
Nursing Care

Know what to watch out for
Active complication prevention
Complication recognition
Complication management
Early mobilisation
Communication
Nursing Care

Know what to watch out for
Active complication prevention
Complication recognition
Complication management
Early mobilisation
Communication

Palliative care
ACUTE STROKE MONITORING: 72 HOUR ACTIONS CHART

THE MOST COMMON CAUSE FOR STROKE DETERIORATION AFTER 24 HOURS IS MEDICAL:

3 HOURLY ASSESSMENTS FOR FIRST 12 HOURS
THEN 6 HOURLY for 72hrs:

1. Neurological observations (coma record sheet) including GCS
2. Blood Pressure
3. Heart Rate
4. Temperature
5. Respiration
6. Oxygen saturation

Daily assessment of:
1. Blood sugar level

Once:
Weight

Increase frequency of assessment of above if any abnormal findings (any patient of serious concern, or a 2 - point drop in GCS, or a 1 - point drop in motor response on the GCS chart)

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NEUROLOGICAL DETERIORATION:

- Check airway
- Elevate head of bed
- Check BP, HR, Temp, RR, O₂ sats, and BSL correct all abnormalities
- Inform Doctor
- Doctor to:
- Check above and consider reversible causes:
  - Pneumonia
  - Septicaemia
  - Pulmonary Embolus /VTE
  - Cardiac cause
  - Sedative Drugs
- Re-examined and if unexplained deterioration in neurology or GCS then SMO should be called
- Consider urgent CT
- FBC, biochem, INR

OXYGEN SATURATION <95% OR OXYGEN SATURATION FALLS >3%:

(An episode of O₂ Sats <90 doubles complication risk)

- Check mouth and airway
- Check position (sit out if possible) or elevate head of bed
- Position drowsy patients in the left or right lateral position to allow drainage of secretions
- Exclude aspiration (frequently low O₂ sats are often the only sign)
- Chest physiotherapy

If no response to above:

- Medical review
- Exclude/treat pneumonia, PE, CCF, bronchospasm or Cheyne-Stokes respiration
- Give oxygen 2L/min if saturation persistently <95%, recheck after 30 mins
- ABG if no response or if history of chronic chest problems. Consider CXR
ACUTE STROKE MONITORING: 72 HOUR ACTIONS CHART

THE MOST COMMON CAUSE FOR STROKE DETERIORATION AFTER 24 HOURS IS MEDICAL:

THE OPTIMAL BP IS 160-180/90-100 EARLY AFTER STROKE.
180/105 IF KNOWN HYPERTENSIVE:

BP=140/100
- Stop/Reduce antihypertensive/s
- Ensure adequate hydration

BP=120/80
- As above
- Elevate end of bed
- Medical Review
- Look for other causes of hypotension e.g. infection/PE/volume loss

BP=200/120
- Put patient at ease.
- Check for pain or discomfort (e.g. headaches, retention, impaction, odd posture in bed) and treat if present
- Measure BP on both arms
- Medical review
- Make sure the patients who were on regular antihypertensive drugs have received their treatment; if nil by mouth give via NGT or prescribe parenteral alternatives
- Check BP 2 hourly, or hourly if >220/130

DRUG TREATMENT of HYPERTENSION SHOULD BE CONSIDERED IF:

- BP > 185/110 in thrombolysed patients
- BP persistently >180/105 AND the patient has an acute intracerebral haemorrhage or >230/120 and hypertensive encephalopathy, or significant other comorbidity requiring urgent treatment
- BP >220/120, and does not settle with rest and relief of discomfort within 1 hour
- HOW
  - Discuss with Consultant
  - Oral agents preferred if able
  - PO/NG Labetolol 100mg qid
  - IV Labetolol 10mg/1-2-min.
  - Repeat or double every 10-20mins until ok or total dose 150mg
  - Monitor BP every 15min and watch for hypotension
- Start secondary prevention antihypertensive/s at 7-10 days
# ACUTE STROKE MONITORING: 72 HOUR ACTIONS CHART

## THE MOST COMMON CAUSE FOR STROKE DETERIORATION AFTER 24 HOURS IS MEDICAL:

<table>
<thead>
<tr>
<th>Temperature &gt;37.5°C:</th>
<th>CONTINENCE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Paracetamol 1g QID</td>
<td>- Placing an IDC worsens outcome, especially if still present by day 3</td>
</tr>
<tr>
<td>- Cooling strategies (reduce bedding, fan etc.)</td>
<td>- Over-distended bladder worsens outcome</td>
</tr>
<tr>
<td>- Ask Doctor to review</td>
<td>- Check post void bladder volume with US regularly if risk</td>
</tr>
<tr>
<td>- Look for cause of pyrexia and treat appropriately</td>
<td>- Manage with pads initially</td>
</tr>
<tr>
<td>- Check FBC, MSU, blood culture, CRP, examine chest, IV site</td>
<td>- IDCs are for retention, not incontinence</td>
</tr>
<tr>
<td>- If urinary catheter in place remove unless required for retention of strict fluid balance</td>
<td></td>
</tr>
</tbody>
</table>

## GLUCOSE > 11 mmol/L: (>16 mmol/L non diabetic)

- Avoid hypoglycaemia (this is worse than hyperglycaemia)
- Fluctuating blood sugars are common after stroke, even if usually normoglycaemic
- On admission, if BS elevated >8, start saline infusion for 6 hours
- If persistent elevation consider starting insulin. Subcut NovoRapid insulin (e.g. 5U if thin, 10 U if normal weight, 15 U if obese) and repeat 4 hourly (or at meal times, if eating) as needed. Alternatively start intravenous insulin (1 unit/mL in 0.9% saline) at a rate of 3 units/hour and titrate as necessary
- Monitor BSL 1-2 hourly if using intravenous insulin or 4-6 hourly if using subcut insulin. Aim to keep BSL between 6 and 12
Early Rehabilitation
What does this mean?
Early Rehabilitation
What does this mean?
Early Rehabilitation
What does this mean?
Early Rehabilitation
What does this mean?
Early Rehabilitation
What does this mean?
Early Rehabilitation
What does this mean?
KEEP CALM
I'M DISCHARGE PLANNING
Discharge Planning

Up to 75% strokes not being discharged from rehab ward

Nelson driving advice 20% - 80% with the use of stroke specific discharge letter
Rehabilitation

The separation from acute is artificial
Seamless transitions /shared goals are vital

Patient journey-Smooth transitions vital

Community

Early Supp Discharge

Self driven rehab

CSRS

SRU

BIRS

ASU

ED

Pre hosp

Stroke
What is Rehabilitation?

• Rehabilitation aims to
  – *maximise participation* of the person in his social setting,
  – *minimise* the pain and distress experienced by the person and
  – *minimise* the distress and stress on the person’s family/carers.

• Rehabilitation should be goal focused and occur in an appropriate *cultural and environmental context*. 
The 5 “R”s of Rehabilitation

• Realisation of potential and recovery
  – Ensuring that the duration of contact time with staff has been sufficient

• Re-enablement
  – Focusing on promoting independence in ADL such as walking and dressing

• Resettlement (“discharge”)
  – Helping the person to leave hospital feeling safe, well supported and confident

• Role fulfilment
  – Helping the person re-establish their status and personal autonomy

• Re-adjustment
  – Helping the person to adapt to and accept a new lifestyle

Early rehabilitation

‘During the first two weeks on average, as a patient, the key factors on your mind are unrelated to some extent to your rehabilitation and more related to key things in your life, such as how will this affect my relationships with my family, my job, why did this happen to me, was it all my fault, how will my family cope without me working, who will pay the bills …’

My thoughts: Engagement, the individual and where they are at, shock, sudden-ness, real life
This is all part of rehabilitation,....... and may impact on physical rehab
Rehabilitation and Repetition
Intensity/Dose of Rehabilitation

<table>
<thead>
<tr>
<th>Amount and intensity of rehabilitation</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rehabilitation should be structured to provide as much practice as possible within the first six months after stroke (Kwakkel et al, 2004).</td>
<td>A</td>
</tr>
<tr>
<td>For patients undergoing active rehabilitation, physical therapy (physiotherapy and occupational therapy) should be provided as much as possible but should be a minimum of one hour active practice per day (at least five days a week).</td>
<td>✔</td>
</tr>
<tr>
<td>Task-specific circuit class training or video self-modelling should be used to increase the amount of practice in rehabilitation (Wevers et al, 2009; McClellan &amp; Ada, 2004).</td>
<td>B</td>
</tr>
<tr>
<td>For patients undergoing active rehabilitation, therapy for dysphagia or communication difficulties should be provided as much as tolerated (Bhogal et al, 2003b; Bakheit et al, 2007; Godecke, 2009; Carnaby et al, 2006).</td>
<td>C</td>
</tr>
<tr>
<td>Patients should be encouraged by staff members, with the help of their family and/or friends if appropriate, to continue to practise skills they learn in therapy sessions throughout the remainder of the day.</td>
<td>✔</td>
</tr>
</tbody>
</table>
### Intensity/Dose of rehabilitation

<table>
<thead>
<tr>
<th>Sitting</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sitting practice with supervision/assistance should be provided for people who have difficulty sitting (Dean et al, 2007; Dean &amp; Shepherd, 1997).</td>
<td>B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standing up</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practising standing up should be undertaken for people who have difficulty in standing up from a chair (Langhorne et al, 2009; French et al, 2007).</td>
<td>A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Walking</th>
<th>Grade</th>
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</thead>
<tbody>
<tr>
<td>After thorough assessment and goal setting by a trained clinician, all people with difficulty walking should be given the opportunity to undertake tailored repetitive practice of walking (or components of walking) as much as possible (French et al, 2007).</td>
<td>A</td>
</tr>
</tbody>
</table>
# Stroke Rehabilitation Chart

**Physical Therapies**

<table>
<thead>
<tr>
<th></th>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THU</th>
<th>FRI</th>
<th>SAT</th>
<th>SUN</th>
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<tbody>
<tr>
<td>OT</td>
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<td>OT+TA</td>
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<td>Group</td>
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</tbody>
</table>

Total: Enter the duration of the therapy session in minutes. This is face-to-face time, not documentation time. Enter As for assessments, not minutes.

If you were unable to treat the patient record a Non Administration code D = Declined, S = Sick, U = Unavailable.

The NZ Clinical Guidelines state that for patients in active rehabilitation:
1. Physical therapy (physiotherapy and occupational therapy) should be provided as much as possible, but should be a minimum of one hour of active practice per day, at least five days per week.
2. Therapy for dysphagia or communication difficulties should be provided as much as tolerated.

Adapted from the National Stroke Network.
### STROKE REHABILITATION CHART

**REHABILITATIVE NURSING**

<table>
<thead>
<tr>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THU</th>
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<th>SAT</th>
<th>SUN</th>
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<tbody>
<tr>
<td>TRANSFERS</td>
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<tr>
<td>MOBILISING</td>
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<td>TOILETNG</td>
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<tr>
<td>PERSONAL CARES</td>
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<tr>
<td>DRESSING</td>
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<td>FEEDING</td>
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<td>MEDICATION</td>
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<tr>
<td>THERAPY PROGRAM</td>
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</tbody>
</table>

Tick in the appropriate box when you have provided rehabilitation support for these activities.

### EDUCATION AND SUPPORT

Delivered by any staff member

<table>
<thead>
<tr>
<th>FAMILY PRESENT</th>
<th>Y</th>
<th>N</th>
<th>Y</th>
<th>N</th>
<th>Y</th>
<th>N</th>
<th>Y</th>
<th>N</th>
</tr>
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<tbody>
<tr>
<td>FAMILY PRESENT</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
</tr>
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</table>
Intensity (dose) chart

YouTube clip

https://youtu.be/96litlz-rOQ
Autonomy
(needs planned withdrawal of supports)

Patient Autonomy

100%

Discharge from us

Time

Acute care

Inpatient rehab

Community Rehab

Therapeutic gap
Intensity of Rehabilitation

- Intensity of what?
- By whom?
MOH Rehabilitation targets

• (2016-17 plans)
  – Of the patients admitted with acute stroke and are transferred to inpatient rehabilitation services, what % are transferred within 7 days of acute admission?
    • Target 80%
  – Of the patients admitted with acute stroke and need community rehabilitation, what % have their first face-face assessment within 7 days from discharge?
    • Target 80%
Time to transfer to inpatient rehab

Cumulative graph for transfer to rehab at Bwd by X day, using 2014 discharge coding data

Time from admission to transfer to rehab for PMH patients 2014
Community mobility
Which is more meaningful?
Context is important

vs.

Relevance and Removing Barriers
Audit

Is your service performing against existing standards?
Audit using Survey Monkey

Acute Stroke Service Clinical Audit May

Stroke Onset and Hospital Stay

6. Stroke onset time and date

Please enter a valid time and date

7. Did the stroke occur while the patient was in hospital?

- Yes
- No
- Unknown

8. Date and time of arrival to Emergency Department

Please enter a valid date and time.

9. Mode of arrival

- Ambulance (emergency)
- Ambulance (non-emergency)
- Private method - (not ambulance)
- Not documented
Q37 What type of brain scan was performed?

- Both CT and MRI: 20.51% (8)
- MRI: 2.56% (1)
- CT: 76.92% (30)

Q39 If did not have a brain scan, what was the primary reason for this?

- 100% (4)
Q95 Did the patient have an indwelling urinary catheter within the first week of admission?

- Yes: 7.69% (3)
- No: 92.11% (35)

Q96 Which of the following have been documented as the reason for urinary catheterisation? Please tick all that apply.

- Urinary retention: 100.00% (3)
Carl’s Recipe for Organised Stroke Services

• Clinical Champion
  – Find one, challenge one or become one!
• Enthusiasm for stroke
  – equal mix of passion mixed expertise
• Persistence
• Patient stories
• Use the guidelines
Questions for Suzanne?