Australian Government
National Health and Medical Research Council
NHMRC

Emergency Department Stroke and Transient Ischaemic Attack Care Bundle

INTRODUCTORY SESSION

National Institute of Clinical Studies Emergency Care Community of Practice
www.nhmrc.gov.au/nics
WORKING TO BUILD A HEALTHY AUSTRALIA

What is a care bundle?

A care bundle is a small group of evidence-based clinical practice points that, when combined, define best care and significantly improve patient outcomes

Emergency Department Stroke and Transient Ischaemic Attack Care Bundle: Information and Implementation Guide. NICS; 2009.

A bundle is not a list of absolutes or precise protocols:

"*It is a set of steps that experts believe are critical, but in many cases the clinical values attached to each step are locally defined or may change over time based on evolving research and the experiences of users*"

Institute for Healthcare Improvement. Bundle Up for Safety. 2004

What is a care bundle?

For a care bundle to be effective, each practice point must:

- Be based on **sound evidence**
- Be in need of **improvement**
- Be **achievable** in terms of resources
- **Not be controversial**
- Be **measurable.**

A care bundle influences practice in two ways:

- As a **memory aid** and a **simple audit tool.**

Why focus on stroke?

- Stroke is a medical emergency
- Stroke is Australia's second single greatest killer after coronary heart disease and is a leading cause of disability
- Management of acute stroke was identified by ED clinicians nationally, through the NICS Emergency Care Community of Practice, as an area of clinical priority
- **Rapid and appropriate ED care <u>can</u> make a difference to long term stroke outcomes**

Development of the care bundle

- Developed by NHMRC NICS and the NICS Stroke Clinical Reference Group
- Developed for use in Australian EDs to support clinicians improve evidence-based care of acute stroke and TIA patients
- Based on the NSF Clinical Guidelines for Acute Stroke Management
- Received endorsement from:
  - National Stroke Foundation
  - Australasian College for Emergency Medicine
  - College of Emergency Nursing Australasia
  - Australian College of Emergency Nursing

ED stroke and TIA care bundle

- ✓Rapid initial stroke screen
- ✓ABCD2 assessment when TIA suspected
- ✓Urgent CT or MRI
- ✓Nil by mouth until bedside swallow screen (within 24 hours) for stroke
- ✓Aspirin administered as soon as possible, if haemorrhage excluded
- ✓Physiological monitoring and treatment:
  - neurological status
  - blood pressure
  - blood glucose
  - hydration status

Rapid initial stroke screen

- Training in, and use of, a validated stroke screen by ED clinicians = increased diagnostic accuracy
- Rapid and accurate diagnosis of stroke = earlier and more appropriate referrals = better outcomes
- Stroke screen should trigger an early referral to the best available stroke expertise

Rapid initial stroke screen

- A number of validated stroke screening tools currently are available - *CPSS, FAST & LAPSS, MASS, NIHSS, ROSIER*
- ROSIER is the only tool that has been validated specifically for use in the ED following triage
- CPSS, FAST, LAPSS and MASS have been developed and validated for pre-hospital use

ABCD^2 assessment when TIA suspected

ABCD^2 Tool

A	Age: ≥ 60 years (1 point)
B	Blood pressure: ≥ 140/90mmHg (1 point)
C	Clinical features: unilateral weakness (2 points), speech impairment without weakness (1 point)
D	Duration: > 60 mins (2 points), 10-59 mins (1 point)
D	Diabetes (1 point)

Tool interpretation

>4 = HIGH risk; ≤4 = LOW risk

Maximum score = 7

ABCD^2 assessment when TIA suspected

- TIA patients are at high risk of early subsequent stroke – up to 10% in 48 hrs
- ABCD^2 = used to stratify TIA patients into high/low risk of early subsequent stroke
- Stratification can be used to guide management plan – urgent inpatient treatment versus outpatient treatment

Urgent CT or MRI

- Brain imaging is required to distinguish ischaemic stroke from intracranial haemorrhage and stroke mimics
- Imaging should be performed immediately so that treatment can start promptly
- Clinicians disagree on the clinical diagnosis of stroke (versus stroke mimic) in about 20% of patients
- The most cost effective strategy in acute stroke is for all patients to undergo ‘immediate’ imaging, as opposed to ‘within 48 hours’
- In most instances due to availability, CT is the modality of choice for the initial brain scan

Nil by mouth until bedside swallow screen (within 24 hours) for stroke

- Dysphagia occurs in 27-55% of people with new onset strokes
- Dysphagia is associated with an increased risk of complications, such as aspiration, aspiration pneumonia, dehydration and malnutrition
- A failed bedside screen should always be followed by a complete assessment from a speech pathologist prior to ingestion of food, drink or medications

Nil by mouth until bedside swallow screen (within 24 hours) for stroke

- Studies have found that implementation and adherence to a formal dysphagia screening, referral and assessment protocol reduces the incidence of pneumonia, improves process of care and patient outcomes

- NSF 2007 acute stroke audit found that only half of the stroke patients studied had a documented swallow screen before being given food or drink

Aspirin administered as soon as possible, if haemorrhage excluded

- Acute phase aspirin therapy improves outcomes and reduces the risk of early recurrent ischaemic stroke
- There is no data from randomised controlled trials to support the use of other antiplatelet regimes in acute stroke patients
- As for stroke, aspirin should be commenced in TIA patients as soon as haemorrhage has been excluded

Physiological monitoring and management

- **Neurological status**
- **Blood glucose**
- **Blood pressure**
- **Hydration status**

- Monitoring and management of vital signs is routinely conducted for all ED patients. These four elements are included in the bundle because they require special attention or specific management in acute stroke patients

- These elements should be included in the initial assessment. The frequency of subsequent observations should be determined by the patient's physiological status

Physiological monitoring and treatment: neurological status

- The severity of the initial neurological defect has been found to be the single most important variable in determining the rate and degree of recovery

- Monitoring of neurological status using regular neurological observations during the acute phase helps to identify deterioration which can lead to earlier intervention

- Possible assessment tools include:
  - Glasgow Coma Scale (GCS)
  - Canadian Neurological Scale (CNS)
  - National Institutes of Health Stroke Scale (NIHSS)

Physiological monitoring and treatment: blood glucose

- Hyperglycaemia at the time of acute stroke is associated with poorer clinical outcomes, infarct progression, greater mortality and reduced functional recovery
- Hypoglycaemia may cause focal neurological deficits that can be reversed by treatment
- Little evidence to support early, aggressive control of blood glucose in patients with mild to moderately elevated glucose levels, however general consensus suggests that cautious treatment of patients with markedly elevated blood glucose is reasonable
- Avoid hypoglycaemia

Physiological monitoring and treatment: blood pressure

- Both hyper and hypotension have been found to negatively affect outcomes in acute stroke, although evidence regarding specific therapies is lacking
- General consensus is for markedly elevated blood pressure (BP > 220/120) to be cautiously reduced (by no more than 10-20%) and patient observed for neurological deterioration
- Avoid hypotension

Physiological monitoring and treatment: hydration status

- Suboptimal fluid intake in acute stroke leads to negative outcomes. Dehydration is linked to cerebral hypoperfusion and increased ischaemic penumbra size

- Dehydration is of particular concern in stroke patients with dysphagia

Implementation work plan

Step 1 – Becoming motivated to change

- Baseline audit
- Raise awareness

Step 2 –Changing what needs to be changed

- Identify barriers and enablers
- Develop a project plan
- Implement the bundle
- Monitor progress and evaluate change

Step 3 – Making the change permanent

- Sustain progress

NICS Contacts

For more information please contact:

- Your local project lead
- NICS Emergency Care Community of Practice – emergencycare@nhmrc.gov.au, (03) 8866 0400