Acknowledgments

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Implementing evidence-based stroke guidelines

What can hinder implementation?

Why stroke?

What is a care bundle?
What is a care bundle?

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

BUT… 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?

Each practice point in a care bundle must:

- Be based on **sound evidence**
- Be in need of **improvement**
- Be **achievable** in terms of resources
- Not be **controversial**
- Be **measurable**
How does a care bundle improve patient care?

• Also works as a memory aid and an audit tool

• All or nothing intervention

• Must be completed in the same space and time

• Good fit for the emergency department environment
Scope of the care bundle

The NICS care bundle has been designed for use in the emergency department:

- Prehospital care
- Emergency Department care: *Context for use of care bundle*
- Post-emergency department care
ED Stroke & TIA Care Bundle

- All bundle components are derived from recommendations within the 2007 NSF *Clinical guidelines for acute stroke management*

- Supporting evidence drawn from other international guidelines

- Developed over 2 yrs in association with a clinical reference group and the NSF

- 2 stage national and international review process
ED Stroke & TIA Care Bundle

Endorsement from:
National Health & Medical Research Council
National Stroke Foundation
Australasian College for Emergency Medicine
College of Emergency Nursing Australasia
Australian College of Emergency Nursing
ED Stroke & TIA Care Bundle

- Rapid initial stroke screen
- ABCD² assessment when TIA suspected
- Urgent CT or MRI (ASAP or at least within 24 hours)
- Nil by mouth until bedside swallow screen (within 24 hours) for stroke
ED Stroke & TIA Care Bundle continued

- Aspirin administered as soon as possible (if haemorrhage excluded – within 24 hours)

- Physiological monitoring and treatment:
  - neurological status
  - blood glucose
  - blood pressure
  - hydration status
Rapid initial stroke screen

NSF Recommendation
ED staff should use a validated stroke screen tool to assist in rapid accurate assessment of all suspected strokes

Rationale
- Leads to early/appropriate referrals
- Increases diagnostic accuracy
- Timely treatment = better outcomes
- 50% of hospitals audited – no ED triage stroke protocol
ABCD² assessment when TIA suspected

NSF recommendation
All suspected TIA patients should have an assessment of stroke risk using the ABCD² tool

Rationale
• TIA = high risk of subsequent stroke
• Risk stratification tool
• <50% hospitals have a defined TIA pathway
• Only 39% using a risk stratification tool
Urgent CT or MRI

NSF Recommendations
All suspected stroke and high risk TIA (ABCD$^2 > 4$) patients should have an urgent* brain CT or MRI

Low risk TIA patients (ABCD$^2 < 5$) should have a CT brain and carotid ultrasound (where indicated) as soon as possible**

* ‘urgent’ is considered as soon as possible, but certainly less than 24 hours
** ‘as soon as possible’ is considered within 48-72 hours
Urgent CT or MRI

Rationale

• Required to distinguish haemorrhagic from ischaemic stroke to facilitate timely treatment

• Clinicians disagree on the clinical diagnosis of stroke (versus stroke mimic) in about 20% of patients

• ‘Immediate’ imaging (versus ‘within 48hrs’) is most cost effective

• 1/3 of rural hospitals had no access to CT
Nil by mouth until bedside swallow screen (within 24 hours) for stroke

NSF recommendations

All stroke patients should have a bedside swallow screen performed by trained personnel prior to any oral intake

Patients who fail the bedside screen should be referred to a speech pathologist for a comprehensive assessment
Nil by mouth until bedside swallow screen (within 24 hours) for stroke

Rationale

• 27-55% of patients with new onset stroke experience dysphagia

• Increased risk of aspiration, dehydration & malnutrition

• In one study, only half of stroke patients had a documented swallow screen before oral intake
Aspirin administered as soon as possible, if haemorrhage excluded

**NSF recommendation**
Aspirin (150-300mg) should be given as soon as possible after the onset of stroke symptoms (i.e. within 48 hours) if CT/MRI excludes haemorrhage and not contraindicated

**Rationale**
- Improves outcomes
- Reduces the risk of recurrent ischaemic stroke
Physiological monitoring and treatment: Neurological status

**NSF recommendation**
Patients should have their neurological status monitored and documented regularly during the acute phase.

**Rationale**
- Severity of initial neurological deficit determines rate and degree of recovery.
- Early detection of changes means timely intervention.
Physiological monitoring and treatment: Blood glucose

**NSF recommendation**
Patients should have their glucose monitored and documented regularly during the acute phase

**Rationale**
- Hyperglycaemia associated with poorer clinical outcomes, infarct progression, greater mortality and reduced functional recovery
- Hypoglycaemia may cause neurological deficits that mimic stroke and should be avoided
Physiological monitoring and treatment: Blood glucose

Management

- Monitoring and therapy should be appropriate to maintain euglycaemia but intensive maintenance not recommended as hypoglycaemia should also be avoided.

- Hypoglycaemia should be corrected so it can be ruled out as a cause of neurological deficits.

- Diabetic patients should be treated as per appropriate protocols.
Physiological monitoring and treatment: Blood pressure

**NSF recommendation**
Patients should have their blood pressure monitored and documented regularly during the acute phase

**Rationale**
Hyper/hypotension in the first 24hrs associated with poorer clinical outcomes

**Management**
SBP > 220 or DBP > 120 or MAP > 130 should be cautiously reduced by no more than 10-20% and patient observed for neurological deterioration
Physiological monitoring and treatment: Hydration status

NSF recommendation
Close monitoring of hydration status and appropriate fluid supplementation should be used to treat or prevent dehydration

Rationale

• Suboptimal fluid intake associated with poorer outcomes
• Particularly problematic for dysphagic patients
• Dehydration is linked to cerebral hypoperfusion and increased *ischaemic penumbra* size

*Ischaemic penumbra* is the cerebral area peripheral to the area of ischaemia where metabolism is active but blood flow is diminished
Implementation resources

NICS contacts & Webpages

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**Care Bundle Resources**


**NSF Guidelines**