National Institute of Clinical Studies

PART 1: Introduction

Emergency Department Stroke and Transient Ischaemic Attack Care Bundle:

Information and implementation package

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WORKING TO BUILD A HEALTHY AUSTRALIA

Part 1: Introduction

This resource has been developed by the National Institute of Clinical Studies (NICS) in association with the NICS Stroke Clinical Reference Group (see Appendix A for reference group membership), for use in Australian emergency departments (EDs) to support clinicians to improve the care of acute stroke patients, in accordance with the National Stroke Foundation (NSF) *Clinical guidelines for acute stroke management*.[1]

This introductory section outlines what a care bundle is, how it should be used and how it can help emergency clinicians in delivering best practice acute stroke and transient ischaemic attack (TIA) care.

This document also contains:

- a summary of each component of the bundle, including the rationale for its inclusion, audit measures, and an evidence summary taken from selected guidelines (see Appendix B for included guidelines)

- an implementation guide (Part 3: Implementation), including an audit tool (Appendix C) and a project plan template (Appendix D).

Why focus on stroke?

Acute stroke is a medical emergency. Appropriate initial management can reduce disability and mortality resulting from stroke.[2]

Stroke is Australia's second single greatest killer after coronary heart disease and is a leading cause of disability.[2] There are approximately 60,000 new and recurrent strokes in Australia every year and this number is expected to increase as the population ages.[4] Approximately a third of people with stroke will die within the first 12 months.[1]

In 2005, the estimated cost of stroke in Australia was $2.14 billion per annum.[4] Effective, evidence-based stroke care aims to promote maximum recovery and prevent costly complications and subsequent strokes.[1]

Management of acute stroke was identified by the NICS Emergency Care Community of Practice (EC CoP) as an area of clinical concern. For more information about NICS EC CoP, go to **www.nhmrc.gov.au/nics/programs/emergency**.

What is a care bundle?

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

The NICS Stroke Bundle is derived from the NHMRC-endorsed National Stroke Foundation (NSF) *Clinical guidelines for acute stroke management.*[1]

Care bundles are designed to influence practice by providing an easily memorised 'bundle' of evidence-based practice points that should trigger a number of follow-on tasks, and also by providing a simple audit tool to measure the actual delivery of the practice points.[5]

There are several elements that are fundamental to a care bundle:

- The components must be undertaken in the same space and time interval (in this case, presentation to the ED and care provided by ED staff prior to transfer to a ward or discharge).
- The completion of each component must be auditable with a simple 'yes' or 'no' response.
- The completion of the whole bundle must be auditable with a simple 'yes' or 'no' response.

Developers of the care bundle concept, the Institute for Healthcare Improvement[6], suggest that to be effective each component must meet the following criteria:

- each component must be **based on sound evidence**
- the delivery of each component must be **in need of improvement**
- the delivery of each component must be **achievable** in terms of resources
- no component should be a **major source of controversy**
- the delivery of each component must be **measurable**.

It should be noted that the components in a care bundle are not the only elements of care that are necessary to deliver evidence-based care, but they are a subset selected using the above criteria. Other interventions will be necessary within the continuum of care, based on clinical presentation.

A care bundle encourages clinicians to examine the way they deliver interventions. It also provides a method to improve the efficiency and effectiveness of care by standardising clinical care.

Bundles aim to ensure that all patients with the same clinical condition are managed consistently.

What makes a care bundle different?

A care bundle is an all or nothing intervention. It requires compliance with, and measurement of, a set of items, not just individual items.

Unlike a checklist, all components in a care bundle need to be completed in the same space and time interval (in this case the ED stay) for compliance with the bundle. If one element of a bundle is not completed, the bundle has not been completed.[6] This approach allows for those bundle elements that have lower compliance levels to be specifically targeted for improvement.[5]

Unlike a protocol or procedure, only a subset of care interventions are included in a care bundle. This subset is chosen, using the criteria detailed above, with the aim of providing the greatest improvement in patient care outcomes.[6]

A care bundle is deliberately kept small and straightforward to maximise implementation and sustainability.[7] It is not as comprehensive as a guideline and assumes the user either has a certain level of clinical knowledge, or will refer back to the evidence or guideline as required. Each component is therefore a very simple, initial intervention which should trigger a number of follow-on tasks.

A key strength of the care bundle concept is that it provides a simple mechanism for timely measurement of compliance and, with it, the ability to influence clinical practice accordingly. While similar to a standard 'audit cycle', the difference is the speed with which feedback can be provided. Quick compliance audits are possible using a simple yes/no checklist (see Appendix C – Audit Tool Template).

By measuring actual performance and comparing it to expected performance, clinical and non-clinical staff can make informed local organisational changes to improve care. When auditing, data are generally analysed retrospectively and/or sporadically. Conversely, care bundle data are designed to be audited prospectively and fed back to staff in as close to 'real time' as possible.

Development of the stroke care bundle

Management of acute stroke was identified by the NICS Emergency Care Community of Practice as an area of clinical concern. In response to this, the NICS Stroke Clinical Reference Group was formed in early 2008 to develop an acute stroke care resource for the ED.

Given the ED setting and the varied requirements of acute stroke management, the care bundle approach was selected by the reference group as the most appropriate model to prioritise core guideline recommendations for implementation. It is anticipated that this model will have a positive impact on clinical outcomes for stroke patients across all EDs, regardless of size or available resources. An evaluation phase is planned in order to test the effectiveness of this approach.

The care bundle was developed by the reference group using a decision matrix designed for this purpose. All recommendations from the NSF guidelines[1] relevant to the ED were considered as part of the decision matrix. Recommendations were included according to a majority ruling following discussion of each element. Justification for each decision was noted. Bundle components based on each included recommendation, or group of recommendations, were developed. Following finalisation of the bundle components, this supporting document was drafted.

The bundle itself and the supporting document have been reviewed externally in a two stage process. Emergency clinicians and stroke specialists from each state and territory, as well as international experts, were invited to review the bundle. See Appendix E for external reviewers.

All other resources associated with this project have been developed from this document.

Recommendations, recommendation gradings and levels of evidence

Recommendations, recommendation gradings and evidence levels listed in this document under each component have been quoted directly from the NSF *Clinical guidelines for acute stroke management.*[1] The grading and level of evidence listed for each recommendation were assigned by the NSF, according to the NHMRC interim levels of evidence pilot.[8] See Appendix F for the levels of evidence and grading system tables.

Scope and focus of the stroke care bundle

This bundle addresses the ED assessment and management of acute ischaemic stroke and TIA in adults only; it does not specifically include care of children.

This bundle has been developed for use in the ED by ED staff. It has not been developed for pre-hospital use or for use by other specialities that may attend the ED, such as acute stroke unit clinicians. See Figure 1 for the domain in which the care bundle can be applied.

Figure 1: Applicable domain of the care bundle

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

The components of this bundle are derived from the NSF C*linical guidelines for acute stroke management.*[1] Evidence summaries developed for each bundle component have been based on an international shortlist of stroke guidelines. These guidelines, along with the criteria for their inclusion, are listed in Appendix B (see Table 1 for abbreviations of guideline titles or developers used in the evidence summaries).

Unless otherwise described, due to strong similarities between minor ischaemic stroke and TIA, principles and management of TIA should follow that outlined for ischaemic stroke.[1]

The following two sections, Stroke units and Thrombolysis, address two aspects of stroke care that are not included in the bundle as discrete components.

Stroke units

Stroke unit care is the highest priority for clinicians and administrators to consider in acute stroke management.[1] Stroke unit care is defined as dedicated, co-ordinated care for stroke patients in hospital under a multidisciplinary team who specialise in stroke management.[3]

Stroke unit care significantly reduces death and disability after stroke compared with conventional care in general wards for all people with stroke.[1]

Ideally, all patients suspected of having a stroke should be admitted as quickly as possible to an acute stroke unit.[1,9]

This NSF recommendation has not been included in the bundle for the following reasons:

• Currently only about a third of hospitals across Australia offer stroke unit care.[2] Inclusion of stroke unit care or referral to a stroke unit as a component of the bundle would not be in line with the care bundle approach, which is to develop a resource that can be implemented in all situations.

• The 'Rapid initial stroke screen' bundle component supports early referral to a stroke unit where available. A separate recommendation for early referral was not seen as necessary.

• The bundle has been developed purely as a guide for clinical care during the ED stay. Recommending a stroke unit model of care goes beyond ED clinical care.

The developers of this resource strongly advocate for the stroke unit model of care and feel that, although this recommendation was not appropriate for inclusion in this resource, all hospitals treating stroke patients should consider a stroke unit model of care in line with available resources, as detailed in the NSF Acute stroke services framework 2008.[3]

The developers feel that this resource can be used in those hospitals with acute stroke units for the period that the patient is in the ED. Attendance in the ED by stroke unit staff does not preclude completion of any bundle components.

Thrombolysis

Thrombolysis is an important aspect of acute stroke management. Systematic reviews demonstrate a net benefit for patients treated within three hours of stroke with intravenous recombinant tissue plasminogen activator (rt-PA, the only thrombolytic agent approved for use in Australia) in reducing the odds of death or dependency.[1]

Thrombolysis is a time dependent intervention requiring rapid and efficient processes both in pre-hospital and hyperacute hospital settings.

Thrombolysis has not been included in the care bundle because it is currently not recommended for routine use in hospitals without dedicated and organised stroke care or stroke units.[1,9,10] Inclusion of thrombolysis as a component of the bundle would not be in line with the care bundle approach, which is to develop a resource that can be implemented in all situations.

Early referral to the best available stroke expertise (i.e. a stroke unit, where available) should follow on from identification of a possible stroke via the first bundle component, 'Rapid initial stroke screen'. This should result in eligible patients being thrombolysed where the treatment is available.

Thrombolysis for acute stroke is an evidence-based recommendation outlined in the NSF *Clinical guidelines for acute stroke management*[1] and, like stroke unit care, should therefore be considered by all hospitals. Exclusion from the care bundle does not imply that the intervention is not endorsed or should not be administered, just that it is currently not appropriate for inclusion in the bundle.

Table 1:   Abbreviations for included **guidelines** (See Appendix B for full reference list)

Abbreviation	Definition
AHA/ASA	American Heart Association/American Stroke Association Stroke Council: Guidelines for the early management of adults with ischemic stroke[11]
ESO	European Stroke Organisation: Guidelines for the management of ischemic stroke and transient ischemic attack 2008[12]
RNAO	Registered Nurses Association of Ontario/Heart and Stroke Foundation of Ontario: Nursing best practice guideline: Stroke assessment across the continuum of care[13]
ICSI	Institute of Clinical Systems Improvement: Diagnosis and initial treatment of ischemic stroke (7th ed.)[14]
CSN	Canadian Stroke Network/Heart and Stroke Foundation of Canada: Canadian best practice recommendations for stroke care (updated 2008)[10]
NICE	National Institute for Health and Clinical Excellence/National Collaborating Centre for Chronic Conditions: Stroke: national clinical guideline for diagnosis and initial management of acute stroke and transient ischemic attack[9]
NSF	National Stroke Foundation: Clinical guidelines for acute stroke management[1]
SIGN	Scottish Intercollegiate Guidelines Network: Management of patients with stroke or TIA: assessment, investigation, immediate management and secondary prevention. A national clinical guideline[15]
SIGN-D	Scottish Intercollegiate Guidelines Network: Management of patients with stroke: Identification and management of dysphagia. A national clinical guideline[16]
AHRQ	Agency for Healthcare Research and Quality: Acute stroke: Evaluation and treatment[17]