

National Stroke Audit Methodology

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National Stroke Audit Methods

The National Stroke Audit Program

The National Stroke Foundation has been developing clinical guidelines for stroke management since 2003 and has been measuring adherence to recommendations in national guidelines since 2007 through the National Stroke Audit Program. Each alternate year the focus of the audit program changes between acute series and rehabilitation.

The National Stroke Audit Program comprises two components:

1. An Organisational Survey of stroke services across Australia. The survey assesses the resources required to deliver evidence-based stroke care such as the availability of stroke units, comprehensive assessment by the multidisciplinary team and team meetings. The self-reported data are provided by a nominated clinician on behalf of the team.
2. A Clinical Audit involving a retrospective review of up to 40 consecutive patients admitted to participating services. The Clinical Audit is used to measure the delivery of evidence-based processes of care such as timely assessment by allied health, goal setting, care planning and discharge planning.

The Organisational Survey and Clinical Audit were developed in tandem and the results are presented collectively. This is because areas of excellence and areas of need identified in the Clinical Audit may be better understood in association with information about the available resources obtained from the Organisational Survey.

Development of the clinical indicators

A National Working Group was established to review international and local audit questions. A detailed process was undertaken reviewing national clinical recommendations and practices.¹

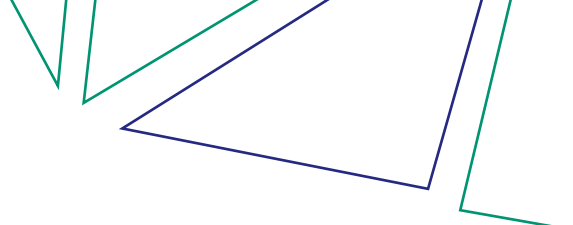
Data collected include:

- Demographic characteristics;
- History of risk factors;
- Stroke severity measures;
- 30 plus evidence based care processes; and
- In-hospital outcomes.

Indicators are reviewed annually based on changes to clinical recommendations, previous audit results, reliability checks and auditor feedback. Indicators align with other national programs such as the Acute Stroke Clinical Care Standard.²

Hospital eligibility

During an acute service audit, hospitals that admit over 50 acute stroke patients annually are invited to participate. During the rehabilitation service audit any inpatient hospital service who provided stroke care in the previous year are invited. Eligible hospitals are identified based on previous audit participation and correspondence with clinical leads or state based clinical network managers.



Participation rates vary between years from 84% of eligible hospitals in 2009 to 88% in 2015. However, hospitals that participate provide acute care for approximately 95% of patients with acute stroke in Australia (see audit reports for exact proportions by year).

Training

Auditors receive standardised training in using the online platforms, a data dictionary and professional support from the Stroke Foundation staff.

Patient eligibility

To minimise selection bias data are extracted for the first 40 or more consecutive stroke admissions over a pre-defined 6 month (acute) or 12 month (rehabilitation) period.

Patients with the following ICD10 codes are eligible for inclusion:

- I61.0 - I61.9 (intracerebral haemorrhage);
- I63.0 - I63.9 (cerebral infarction);
- I64 (stroke not specified as haemorrhage or infarction);
- I62.9 (intracerebral haemorrhage unspecified).

The specificity for diagnosing stroke (any type) using these ICD-10 codes is >95%.³

Data collection

Data are retrospectively extracted from medical records by staff at the individual hospitals and entered into an integrated data collection system known as the Australian Stroke Data Tool (AuSDaT) which has clear governance and policy and procedures.⁴

Data quality checks

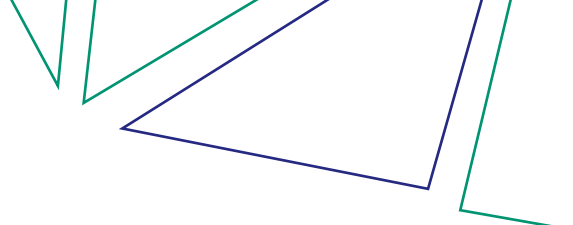
The web-based tool contains pre-defined data fields with inbuilt programmed logic checks. Manual reliability checks are performed via re-auditing of the first 3-5 cases by another staff member and staff are asked to check their responses at completion of the audit to maximise the accuracy of the data and minimise missing items. The data are then submitted to a team of analysts at Monash University who run additional logic checks. Illogical data identified during this checking phase are then sent back to sites for correction. Following data cleaning, the final data were verified with each of the participating hospitals.

Data analysis

Independent analysis is undertaken by staff from the Translational Public Health Unit, Monash University. For confidentiality, identifying information such as hospital name, not necessary for analysis, are excluded from the data submitted to Monash University. Only the hospital site identification number is provided.

The data are analysed using computer programs including Intercooled STATA 10.0 for Windows (Stata Corp, College Station, TX) and Excel (Microsoft Excel 2007). The data is exported from the web-based DET as an Excel spreadsheet and transferred into STATA.

All organisational and clinical data are aggregated to provide national estimates.



Adherence to processes of care is generally calculated on the entire sample. When reporting adherence to care, 'Known N' refers to all eligible patients. In some instances, eligibility criteria for processes of care are specified. The median (50th percentile) and first and third quartiles (25th and 75th) are reported for skewed continuous data from questions such as the number of strokes admitted each year.

Publications using the audit data

The audit data has been used in multiple peer-reviewed publications since its inception in 2007. One recent example used the audit data and processes to demonstrate effectiveness of an implementation project.⁵ This particular project also reviewed the audit process against proposed standards for the conduct of national clinical audit or quality improvement studies and found the National Stroke Audit methods complied with 29 of the 30 proposed standards.^{5,6}

A policy for request to use data from the National Stroke Audit governs third party access. For more information please contact khill@strokefoundation.com.au.

References

1. Harris D, Cadilhac D, Hankey GJ, Hillier S, Kilkenny M, Lalor E. National stroke audit: The Australian experience. *Clin Audit*. 2010;2:25-31
3. Australian Commission on Safety and Quality in Health Care. Acute stroke clinical care standard 2015
3. McCormick N, Bhole V, Lacaille D, Avina-Zubieta JA. Validity of diagnostic codes for acute stroke in administrative databases: A systematic review. *PloS one*. 2015;10:e0135834
4. Information about the AuSDaT is accessed from <http://australianstrokecoalition.com.au/ausdat>
5. Middleton S, Lydtin A, Comerford D, Cadilhac D, McElduff P, Dale S, et al. From QASC to QASCIP: successful Australian translational scale-up and spread of a proven intervention in acute stroke using a prospective pre-test/post-test study design. *BMJ Open* 2016;6:e011568. doi: 10.1136/bmjopen-2016-011568
6. Dixon N. Proposed standards for the design and conduct of a national clinical audit or quality improvement study. *Int J Qual Health Care* 2013;25:357–65. doi:10.1093/intqhc/mzt037







Web Links

National Stroke Audit Reports: <https://informme.org.au/stroke-data>

National Stroke Clinical Guidelines: <https://informme.org.au/guidelines>



How to get more involved

-  **Give time** – become a volunteer.
-  **Raise funds** – donate or hold a fundraising event.
-  **Speak up** – join our advocacy team.
-  **Leave a lasting legacy** – include a gift in your Will.
-  **Know your numbers** – check your health regularly.
-  **Stay informed** – keep up-to-date and share our message.

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