

Audit and Data versus Research

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- Clinical audit provides support for clinical governance and indicates where performance gaps exist
- Used as a quality improvement process
- The aim of audit is to provide evidence of clinical care meeting expected or acceptable standards as described in guidelines
 - When standardised can be used to monitor change in practice and enable reliable benchmarking between services
 - Often low cost in time commitment depending on the available support for analytics and size of audit
 - Competes with direct patient care tasks

Ignorance is bliss!



The essence of clinical audit

Systematic process

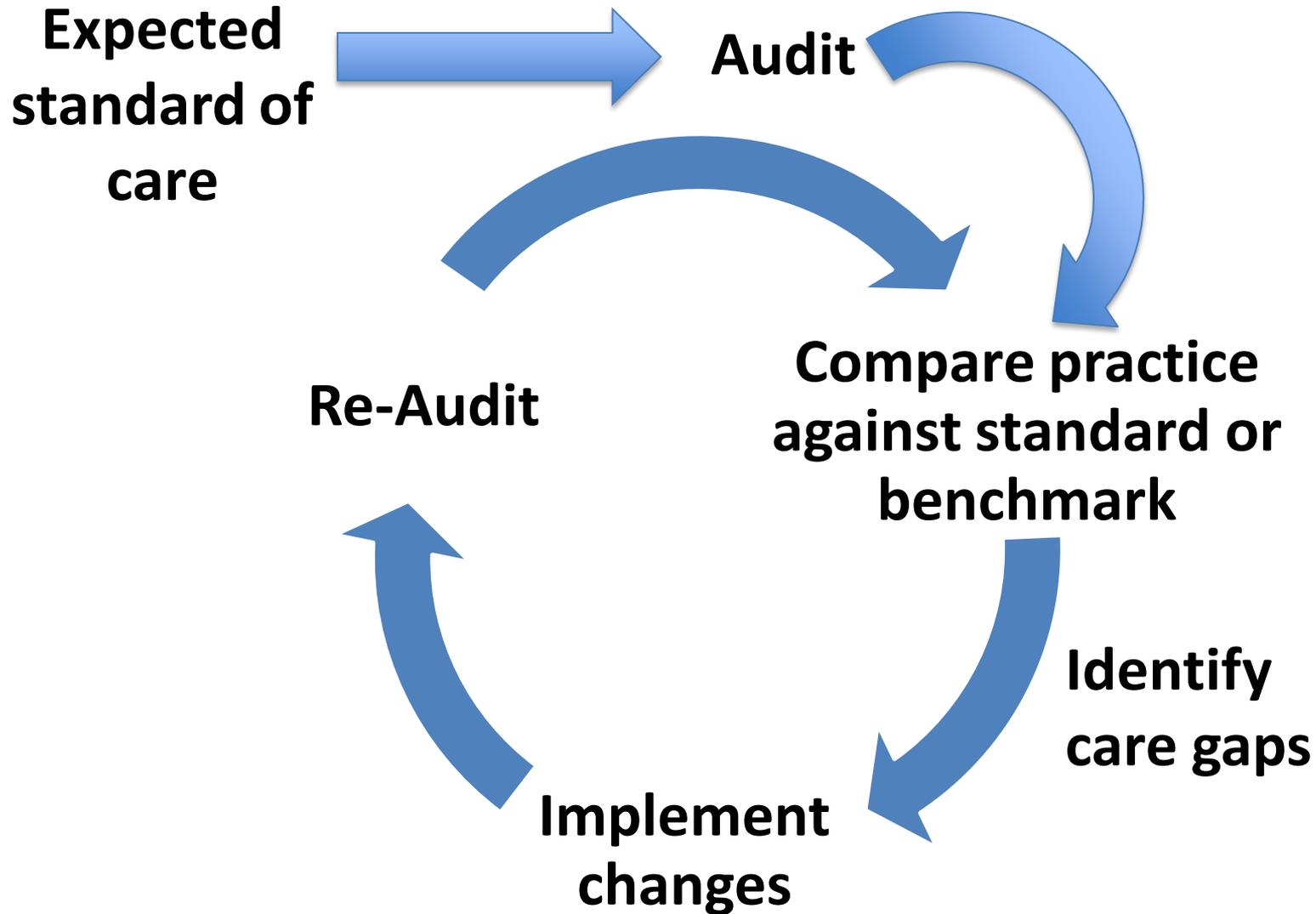
**What should we
be doing?**



**Are we doing it?
Are we similar to
other services?**

**Where care
gaps exist
how can we
improve?**

Clinical Audit Cycle



- Systematic review evidence²: 140 RCTs of audit/feedback
 - Median effect size 4.3% change IQR: +0.5% to 16%
- Audit and feedback alone is not always effective in providing effective change in clinical practice²
 - Need to consider who receives the feedback, format, when and how much³
- No compelling evidence that multifaceted interventions are more effective than single-component interventions⁴
- Importance of identifying clinical and organisational barriers
- Audit, combined with action-planning workshops and follow-up may be more effective for improving care⁵

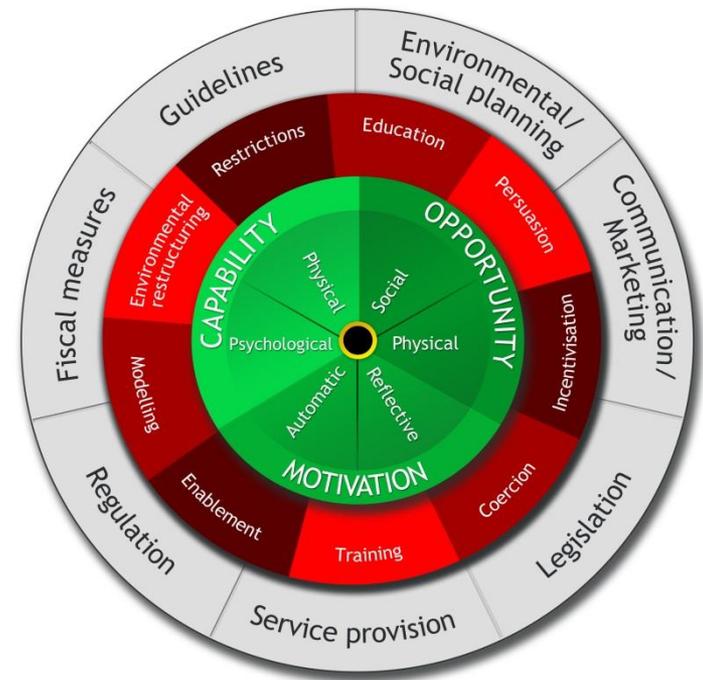
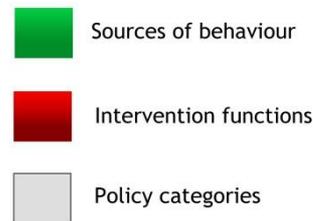
²Ivers et al. Cochrane Database of Systematic Review. 2012; ³Colquhoun et al, BMJ Quality & Safety, 2016;

⁴Squires et al. Implementation Science, 2014; ⁵Jones et al. Journal of Evaluation in Clinical Practice 2015

Closing the Quality Loop : *Implementation Science*

- Successful implementation is dependent on aligning the available evidence to the particular practice context through the ‘active’ ingredient of facilitation⁶

- Other
 - Behaviour change wheel⁷
 - Theoretical domains framework for systematic barrier assessment⁸



⁶Harvey and Kitson, University of Adelaide 2015; ⁷Michie et al. Implementation Science 2011; ⁸Michie et al. Qual Saf Health Care 2005

- Existing tool or designed by experts or individuals
- Data collection:
 - paper-based, administrative systems, online tools
 - single service or multiple services
- Anonymous versus identifiable data
 - Relevant to outcome assessment and data quality checks
- Prospective or retrospective cross-sectional samples or continuous measurement (i.e. clinical registries)
- Random selection or consecutive cases
- Externally collected/ analysed or done internally

Potential Limitations

- Case identification based on inaccurate data
- Potential for different forms of bias
 - Reporting bias: “if it wasn’t documented it didn’t occur”
 - Data may not be representative of all cases within service
- Reproducibility and reliability
 - Questions that rely on subjective criteria
 - Quality of data i.e. missing data/ poor inter-scorer reliability
- Tool modifications:
 - New evidence
 - Difficult to make reliable comparisons over time



Improving the quality of audit data

- Pilot testing data collection tools
- Standardised data collection tools
- Reliability:
 - Training, help notes and data dictionary
 - Consistency between data abstractors
- Data collection via web tools with mandatory fields and inbuilt logic checks
- Data cleaning process
- Data independently analysed
- Verification of case eligibility or other information using multiple reference sources



Audit or Research?



- Regardless if an activity is quality improvement or research, it must be ethically conducted
- May only require low/negligible risk HREC review
- Triggers for consideration of ethical review⁹
 - the activity infringes the privacy or professional reputation of **participants, providers or organisations**
 - Secondary use of data- publication of aggregated/pooled data
 - Gathering information about participants beyond what is collected routinely e.g. additional blood tests
 - Collection of personal information

⁹National Health and Medical Research Council, 2014

Audit

- Coincidental to standard operating procedures to assess performance not usually published
 - Internal reviews separate to a research activity
- Can lead to new research questions related to how we improve such as implementation research

Research

- Developing new knowledge to contribute to the field
- Provides evidence of the effectiveness of policies, guidelines or implementation activities
- Usually a one-off study initiated by researchers
- Secondary use of data e.g. health services research

	Research	Clinical Audit
Evidence generation	Creates new	Tests previous
Hypothesis	✓	X
Methods	RCTs/ observational	Cross-sectional
Randomisation	+/-	No
Timeframe	varies	varies
Ethics	Always	Possibly
External support	+/-	+ /-
Personal information	+/-	+/-
Outcome data	+/-	+/-
Influences clinical practice	✓	✓
Risk of bias	Less pronounced with controlled designs	Sample size / number of sites/ quality of documentation
Costs/ technical skills	+++	+

- Audits provide a source of natural history observational data of current practice
- Audits may be part of a larger program of work that can be used to support research
 - Pooled data used to answer important policy or practice research questions
 - Collect once ‘use many’ – maximises the effort of data collection
 - Important to partner with academics for mentoring and technical support



Examples of large Australian audit programs of stroke care in hospitals

- **Stroke Foundation – National Stroke Audit**
 - Acute and rehabilitation hospitals
- **New South Wales Stroke Audit Program**
 - Acute public hospitals in NSW

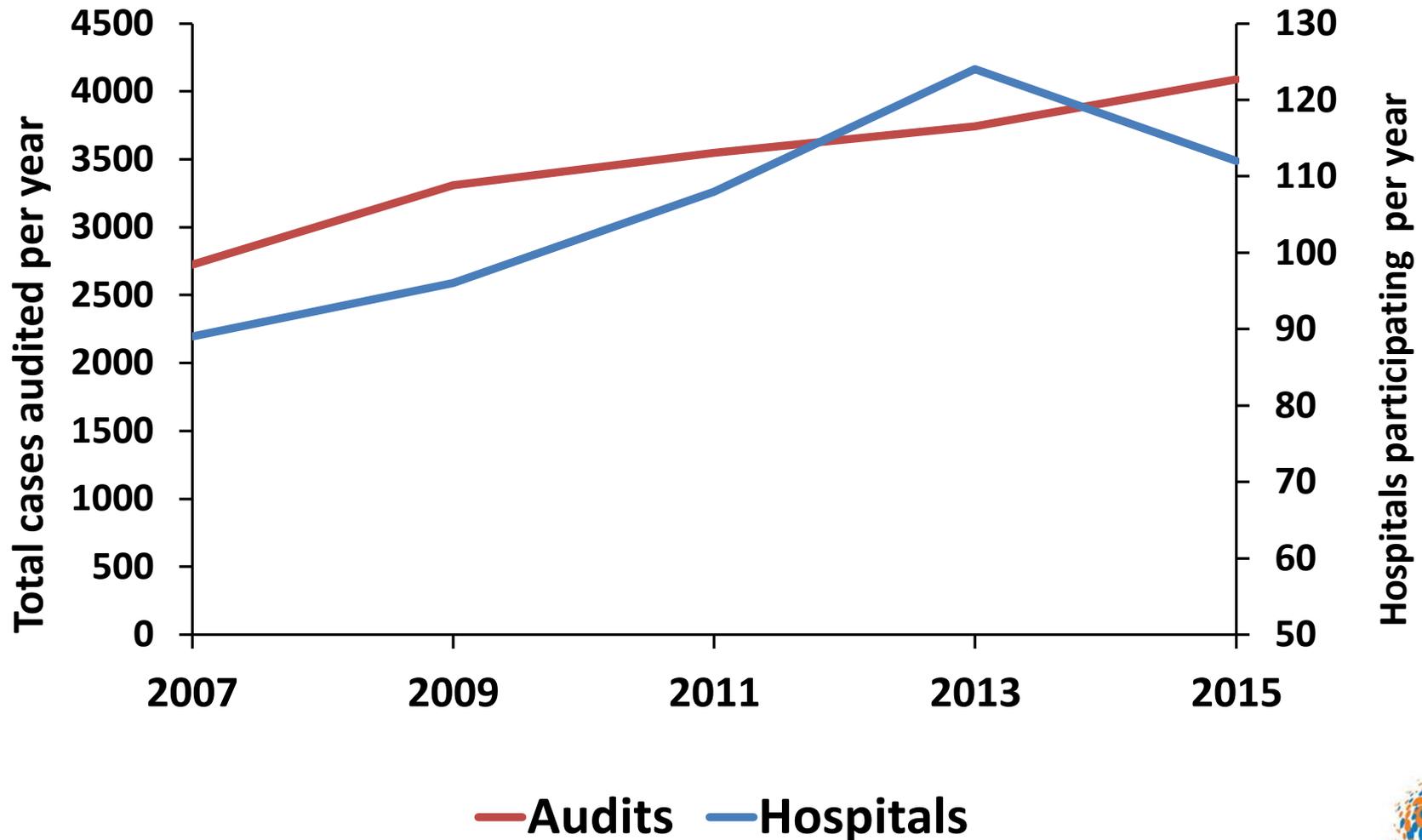


strokefoundation



	Stroke Foundation Audits	NSW Stroke Audit
Location	Acute & Rehabilitation Nationally	Acute hospitals in NSW
Frequency	Biennial	Pre-Post: Following stroke service enhancements
Purpose	Measure adherence to national guidelines	Measure change in adherence to selected evidence-based processes
Method	Retrospective medical record	Retrospective medical record
Hospitals involved	112 (2015)	46 hospitals (since 2002)
Cases audited	40 each hospital	50-100 each hospital
Data collection	Internal Webtool	Internal & external Paper teleforms
Data analysis	External	External
Feedback	National & Site Report (QLD- included facilitated feedback)	Individual Site Report (2014- 2015 active peer support feedback facilitation)
Used for Research	✓	✓

Stroke Foundation Acute Services Audit



ACSQHC Acute Stroke Clinical Standard indicators

- 2015 Stroke Foundation Acute Services Clinical Audit¹¹

Acute Stroke Clinical Standards	Australia n (%)
Assessment in emergency department	1,294 (38)
Thrombolysis in ischaemic stroke patients	231 (8)
Thrombolysis within 60 minutes of hospital arrival	59 (26)
Admission to a stroke unit	2,724 (67)
Discharged on statin, antihypertensive and antithrombotic medication (ischaemic stroke)	137 (66)
Risk factor modification advice before leaving hospital	1,273 (56)

¹¹ National Stroke Foundation 2015 Acute Services Clinical Audit

Changes over time - Acute Services Audit

	2009 (%)	2011 (%)	2013 (%)	2015 (%)
Received stroke unit care	49	59	58	67
Assessed by physiotherapist < 48 hrs	60	65	69	68
Ischemic stroke				
Received intravenous thrombolysis	3	7	7	8
Antithrombotics on discharge	95	97	95	95
Received behaviour change education	43	47	46	56

- Highlights improvements over time, care gaps and where there has been stagnation
- Areas where adherence is high (? value in collecting)



Feedback: Stroke Foundation Audit

- Aggregated data presented in a national report
- Individual site reports provided
 - Benchmarking at state and national level

<i>Acute Stroke Clinical Care Standard Indicator</i>	<i>Your site % or median</i>	<i>National benchmark %</i>	<i>National average n (%) or median (IQR)</i>	<i>National ranking</i>
Assessment in the emergency department	49%	81.4	1294 (38)	34 / 94
Median time (mins) of brain scan from arrival to ED ^	1:28	N/A	1:32 (0:46-3:05)	N/A
Thrombolysis in ischaemic stroke (with exclusions) *	13%	30.7	231 (8)	23 / 72



ORIGINAL ARTICLE

Adherence to Clinical Guidelines Improves Patient Outcomes in Australian Audit of Stroke Rehabilitation Practice

Isobel J. Hubbard, MOT, Dawn Harris, Monique F. Kilkenny, MPH, Steven G. Faux, MBBS, FRACGP, FAFRM, Michael R. Pollack, MBBS, FAFRM, FACRM, FFPM, MMedSci, Dominique A. Cadilhac, MPH, PhD

An audio podcast accompanies this article.
Listen at www.archives-pmr.org.

N=68 hospitals;
2,119 cases audited, NSF 2008
rehabilitation audit

Clinical Audit

Open Access Full Text Article

Identification of a reliable subset of process indicators for clinical audit in stroke care: an example from Australia

This article was published in the following Dove Press journal:
Clinical Audit
5 July 2010
[Number of times this article has been viewed](#)

Dominique A Cadilhac^{1,2}
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Dawn Harris³
Erin Lalor³
on behalf of the National
Stroke Foundation

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Abstract: In 2007, the National Stroke Foundation (Australia) conducted the first national audit of acute inpatient services for stroke with >30 indicators. Routine collection of data for such a large number of indicators can be a burden for clinicians, and methods to identify practical subsets are needed.

N=89 hospitals;
2,724 cases audited;
NSF 2007 acute
audit

... identified 12. Six indicators were consistently selected: stroke unit care; aspirin assessment, and speech pathology assessment within 48 hours; a care plan; and medication at discharge. The scoring method based on the value-based demonstrated excellent agreement with total process scores of hospitals.

Purvis T, Hill K, Kilkenny M, Andrew N, Cadilhac D.
Improved in-hospital outcomes and care for
patients in stroke research: an observational
study. Neurology 2016, accepted 1 April.

Evaluation of Rural Stroke Services: Does Implementation of Coordinators and Pathways Improve Care in Rural Hospitals?

Dominique A. Cadilhac, Tara Purvis, Monique F. Kilkenny, Mark Longworth, Katherine Mohr, Michael Pollack and Christopher R. Levi
on behalf of the New South Wales Strokes Services Coordinating Committee and the Agency for Clinical Innovation

N=8 hospitals; pre-post design; 1,480 cases audited; pre (750 cases) post (730 cases)

Research

Are patients with intracerebral haemorrhage disadvantaged in hospitals?

Renee Sheedy^{1,2}, Julie Bernhardt^{2,3}, Christopher R. Levi⁴, Mark Longworth⁵, Leonid Churilov³, Monique F. Kilkenny^{3,6}, and Dominique A. Cadilhac^{3,6*} on behalf of the New South Wales Stroke Services Coordinating Committee and the Agency for Clinical Innovation

Background and Aims Providing evidence-based clinical care reduces disability and mortality rates following stroke. We

N= 32 hospitals; 3,846 cases; admissions between 2003 and 2010

- Audit data are valuable for:
 - identifying care gaps
 - monitoring change in practice over time
 - performing reliable benchmarking
- To maximise benefits of audit ensure use of a theory informed quality improvement activity
 - “close the loop”
- Ethical considerations for audit are important
- Synergies between audit and research
 - ‘Collect once use many’ – maximise the use of your data
 - The better the quality of audit data the greater chance it can be used to answer important, everyday questions.

Data collection shouldn't bog you down!!



Regular sources of performance data help you understanding the strengths and limitations of your health care service



- **National Stroke Foundation**
www.strokefoundation.com.au
- **Agency of Clinical Innovation** and local hospital staff who assisted with data collection for the NSW audits
- Tara Purvis for her contribution to this presentation

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Thank you