The highs & lows of data in stroke patient care

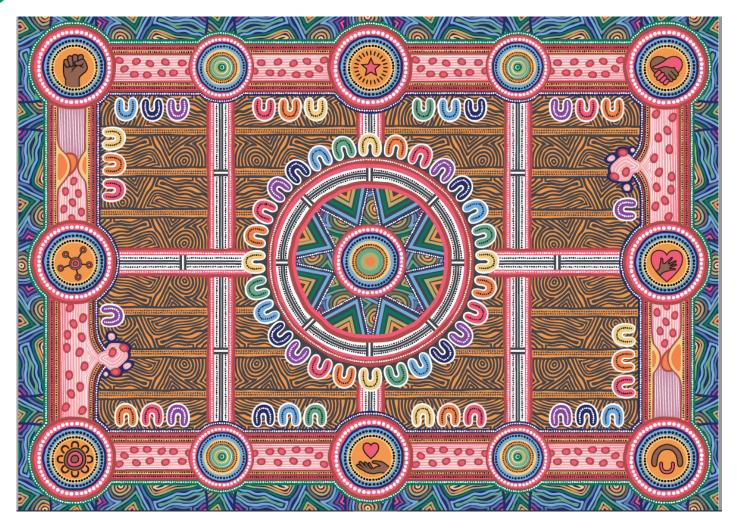**Data and Analytics in Healthcare**
March 2023

Dr Lisa Murphy

Ms Jennifer Muller
Prof Dominique Cadilhac

Artist: Carissa Paglino

I would like to acknowledge the Traditional Owners and Custodians of Country throughout Australia and acknowledge their continuing connection to land, water, sky and community. And pay my respect to the peoples, cultures, and Elders past and present for they hold the memories, culture and hope of their peoples.

I would like to acknowledge that I am joining you from the lands of the Wurundjeri people of the Kulin Nation.

Ms Jennifer Muller

Lived experience expert

CQR and the challenges

**Prof Dominique Cadilhac
Data Custodian, Australian Stroke Clinical Registry
Florey Institute and Monash University**

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Disclosures

- Dr Lisa Murphy - none
- Jennifer Muller - none
- Professor Dominique Cadilhac - grants paid to my institution: Moleac, Boehringer Ingelheim, Bristol Myers Squibb

Coming up

- Why data is so important for patient outcomes
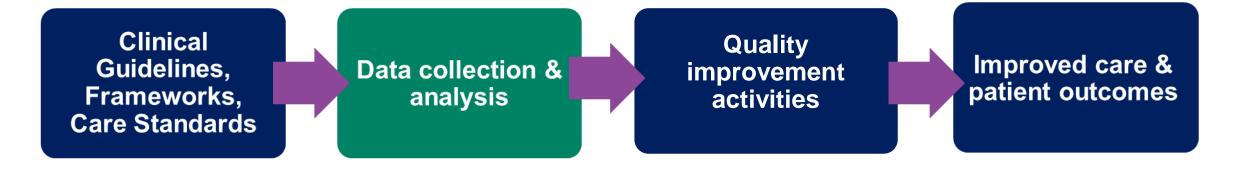
- Lived experience perspective

- Clinical quality registries

- Challenges

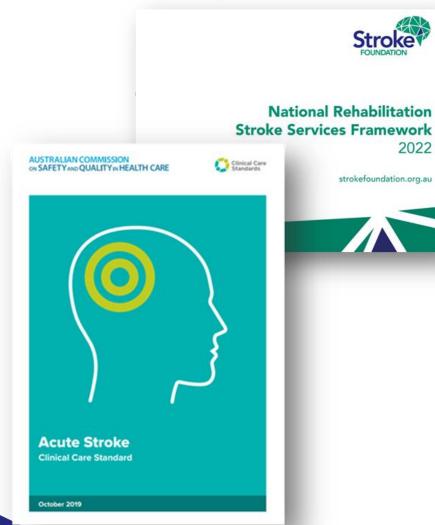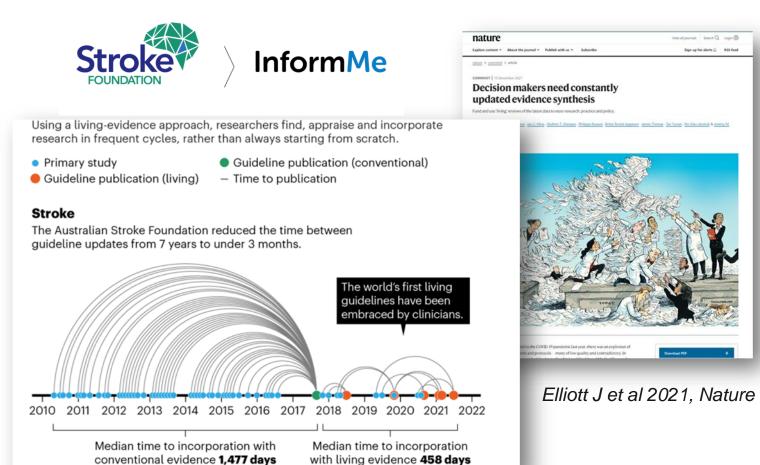# The chain for improved patient outcomes

Clinical Guidelines, Frameworks, Care Standards → Data collection & analysis → Quality improvement activities → Improved care & patient outcomes
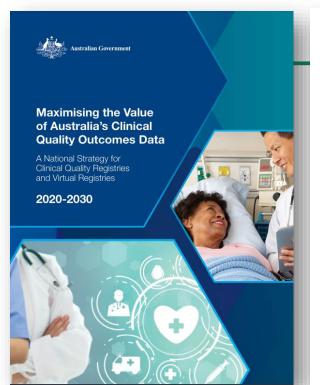
Clinical guidelines, frameworks and care standards

National Rehabilitation Stroke Services Framework 2022 — Stroke Foundation
strokefoundation.org.au

Australian Commission on Safety and Quality in Health Care — Clinical Care Standards
Acute Stroke Clinical Care Standard
October 2019

Stroke FOUNDATION > InformMe

Using a living-evidence approach, researchers find, appraise and incorporate research in frequent cycles, rather than always starting from scratch.

- Primary study
- Guideline publication (living)
- Guideline publication (conventional)
- Time to publication

Stroke

The Australian Stroke Foundation reduced the time between guideline updates from 7 years to under 3 months.

The world's first living guidelines have been embraced by clinicians.

Median time to incorporation with conventional evidence **1,477 days**

Median time to incorporation with living evidence **458 days**

Elliott J et al 2021, Nature

Decision makers need constantly updated evidence synthesis

Source: Kelvin Hill, Heidi Li, Simon Turner, Jordi Elliott, Andrew Duan
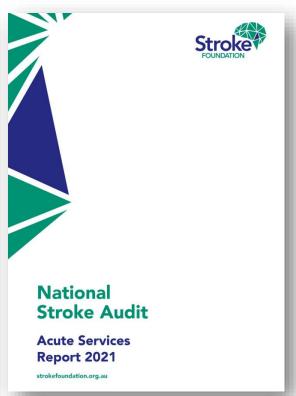
Data collection and analysis

Typically focus on conditions/procedures where:
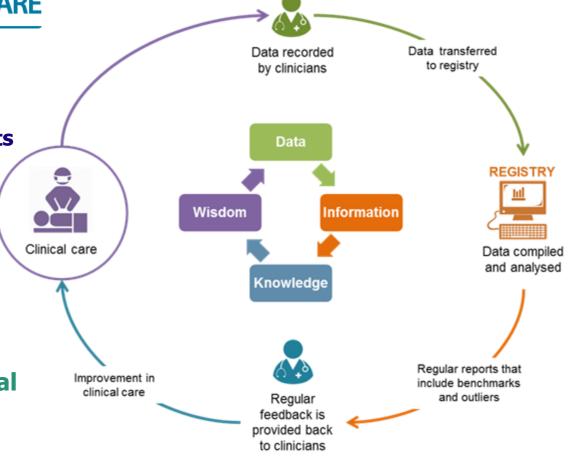
- serious consequences are associated with poor care

- unwarranted variation between service providers exists

- cost burden

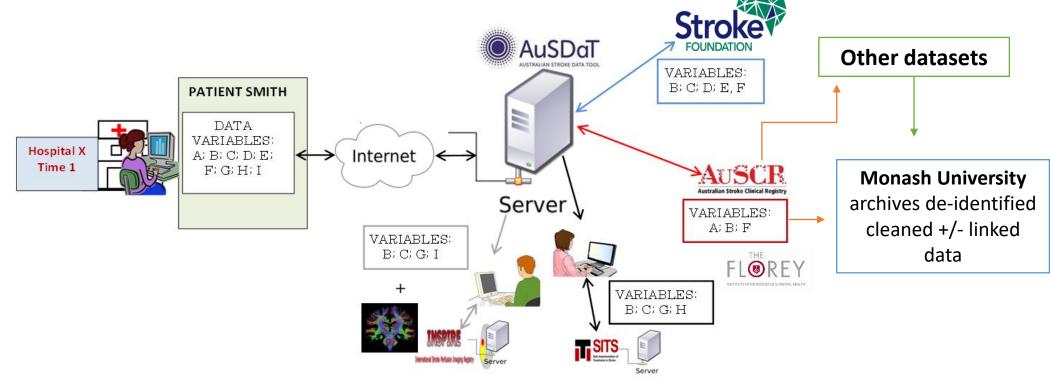- clinical condition or event can be systematically recognized.

Objectives:

- Collect longitudinal health outcome data

- To report on a minimum number of agreed clinical indicators

- Peer and national benchmarks

- Generate risk-adjusted reports on the appropriateness and effectiveness of health care

Australian Commission on Safety and Quality in Health Care, *Framework for Australian clinical quality registries*. Sydney. ACSQHC, March 2014, UPDATE 2022

https://www.safetyandquality.gov.au/our-work/information-strategy/clinical-quality-registries/

Data platform: Australian Stroke Data Tool facilitates 'collect once use many'

Established 2015, first used for AuSCR in 2016

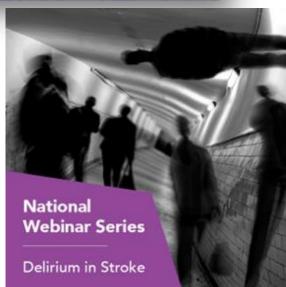# Quality improvement activities

National Webinar Series

National Webinar Series

Introduction to Secondary Prevention Webinar
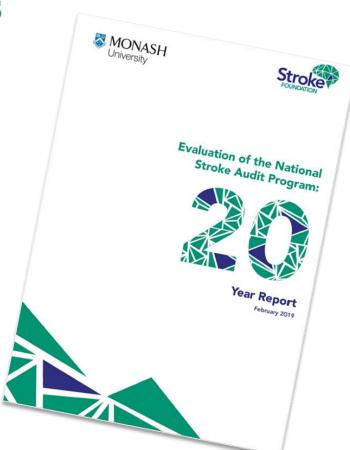

National Webinar Series

Delirium in Stroke

Improved patient care and outcomes

- Overall improvements found in the quality of acute care provided over last 10 years

- Continued monitoring is important to identify gaps in practice and equity of access issues

- Proactive, data-driven and theory-informed efforts to reduce the gaps are ongoing
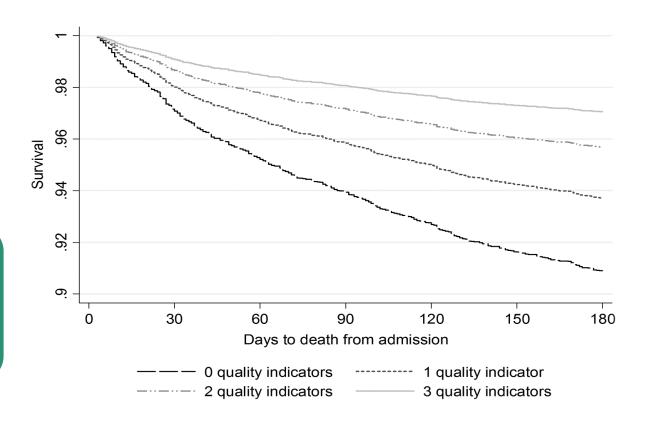

MONASH University

Stroke
FOUNDATION

Evaluation of the National Stroke Audit Program:
20
Year Report
February 2019

Improved patient care and outcomes

Within 180 days:

- 70% reduced hazard of death
- 18-point increase in QoL

Days to death from admission

Survival

- 0 quality indicators
- 1 quality indicator
- 2 quality indicators
- 3 quality indicators

Cadilhac DA, Andrew NE, Lannin NA, et al. *Stroke;* 2017;48:1026-1032

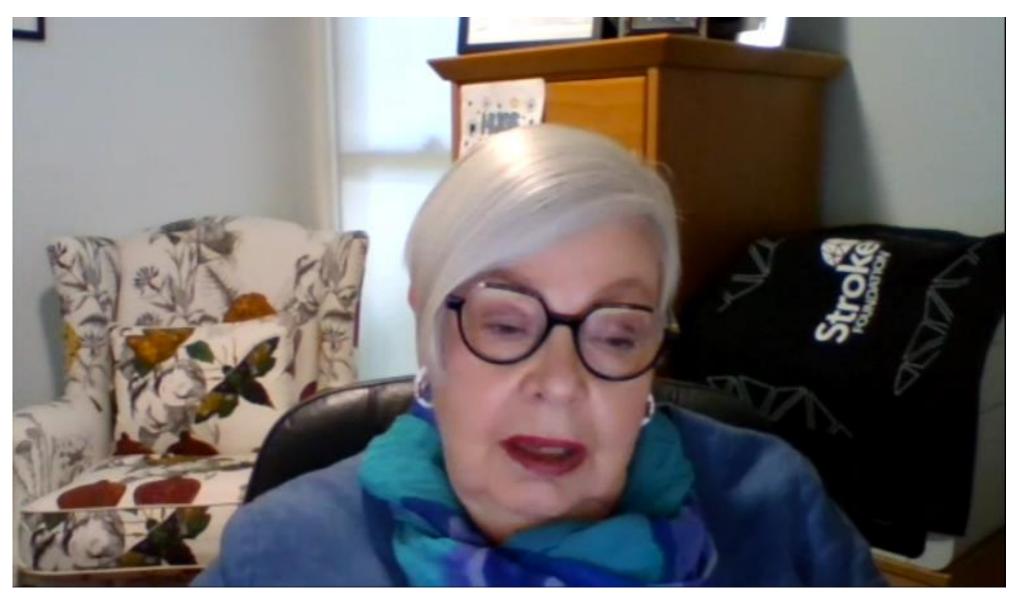# Improved patient care and outcomes

76% (87/115) use telehealth services for acute assessment/treatment (31 provide service to other hospitals)

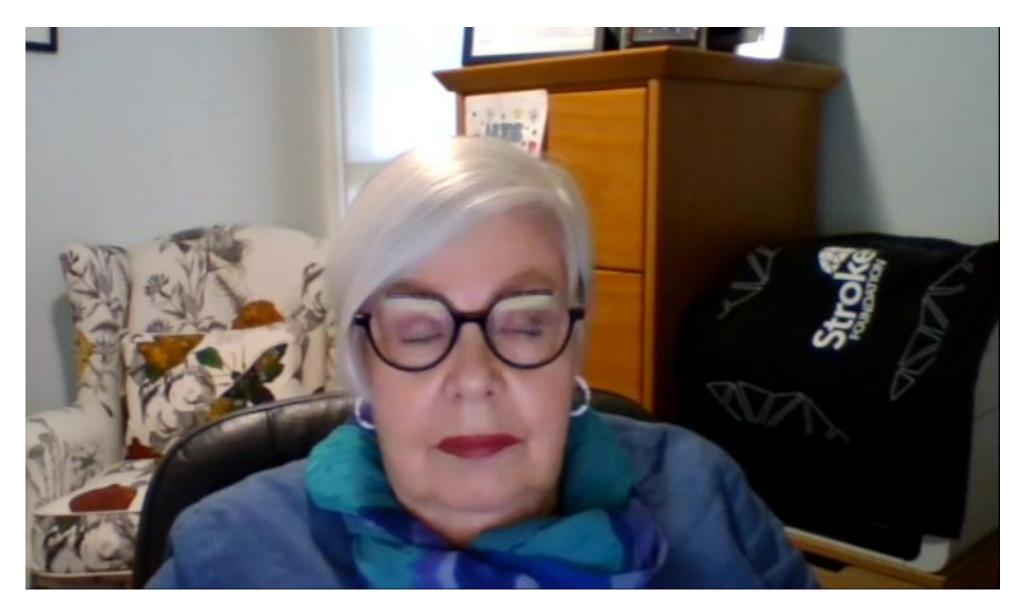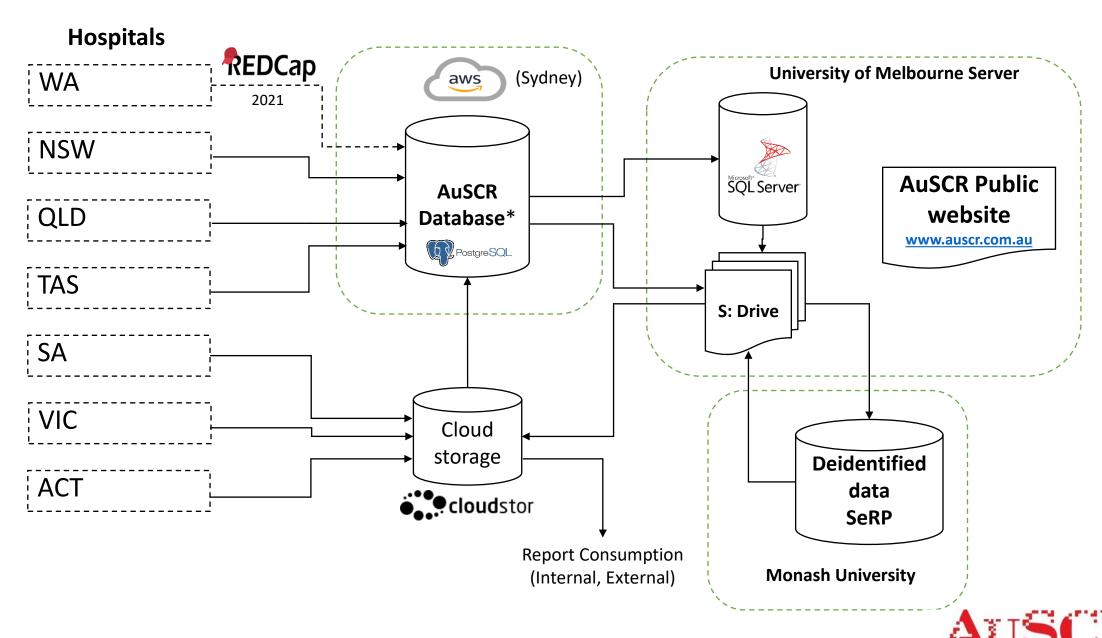|	Formal telestroke service 25 hospitals N=860 cases	No formal telestroke service 13 hospitals N=412 cases
Thrombolysis (IS)	76/723 (11%)	23/294 (8%)
Thrombolysis within 60 mins of hospital arrival	19/76 (25%)	2/23 (9%)
Median door to needle time (hours:minutes) (median, Q1, Q3)	1:14 (1, 1:45)	1:47 (1:27, 2:17)
Median time from onset to thrombolysis (hours:minutes) (median, Q1, Q3)	2:48 (2:13, 3:32)	3:47 (2:32, 4:41)

The challenges for Clinical Quality Registries

- **Funding and technology constraints**
- **Data siloes compromise ready access to the data**
- **Increasing complexity for linkage across data sets**
- **Economies of scale lacking: no shared technology, licensing or resourcing**
- **Security and privacy concerns e.g. lack of regular penetration testing**
- **Population level reporting is achieved by very few registries**
- **Timely reporting of data is lacking**

*Includes test environment and production environment, administrated by Argenti

Data Collection Methods

1

API* (Automated) direct connection (n=0)

Automated connection between hospital data systems and AuSCR, based on eligibility records added and updated per changes in hospital system

2

API (Automated) via intermediary database (n=9, 15%)

- Hospital completes entry into own staging area (RedCAP, SIMS, etc.)
- Hospital submits entry via interface, episode automatically uploaded to AuSCR

3

Hospital template full upload (n=15, 25%)

Hospital enters all data in local system (e.g. Powerform), extracts into excel template and uploads to AuSCR (directly or via AuSCR data manager)

4

Hospital template partial upload (n=12, 20%)

- Hospital extracts some details from eMR (e.g. demographics, arrival/admission dates/times, ICD-10 codes) uploads to AuSCR.
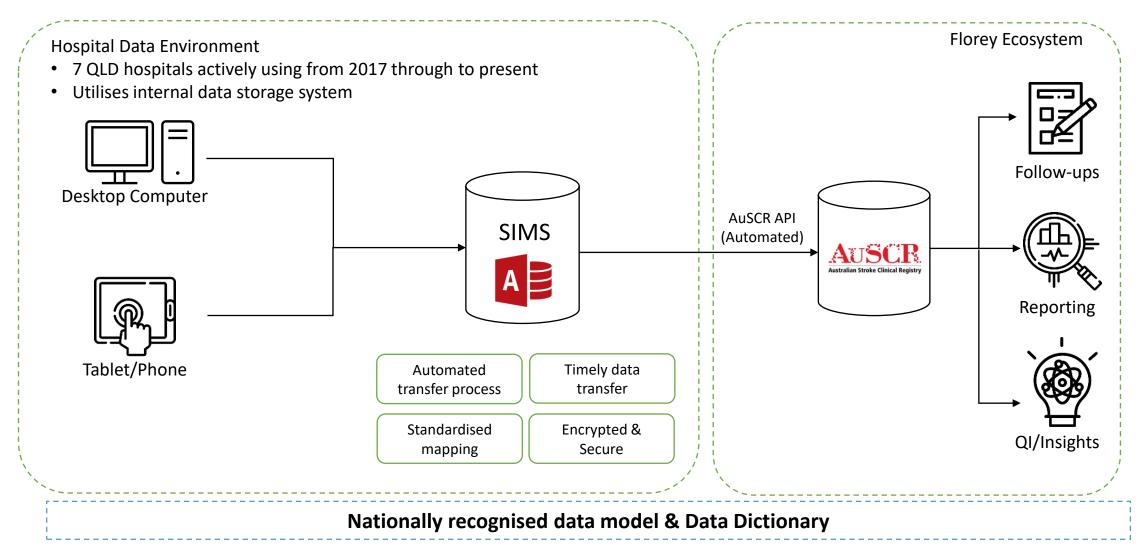- Hospital enters remaining data via AuSDaT

5

Manual entry (n=25, 41%)
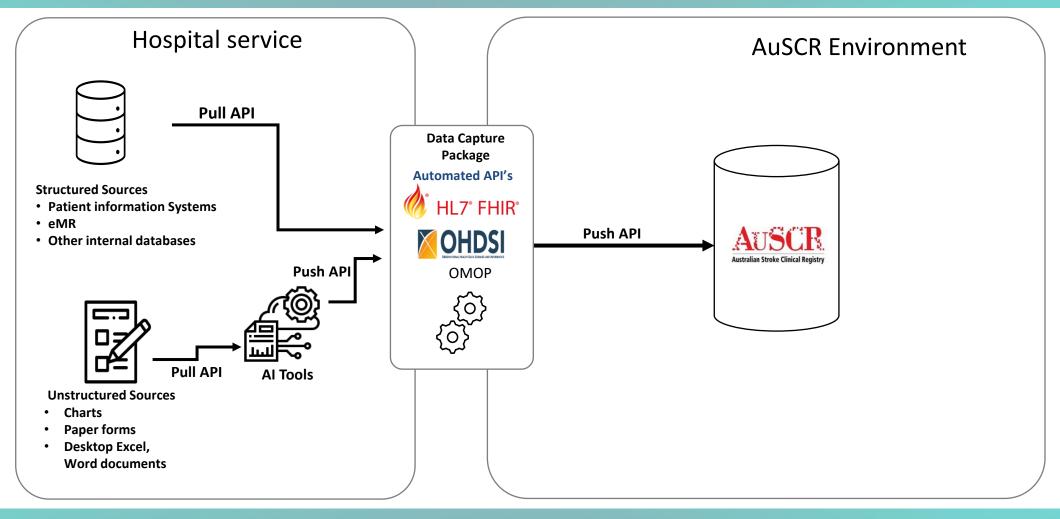
Manual entry by Hospital user via the AuSDaT

API = *Application Programming Interface

Queensland SIMS (Stroke Information Management System since June 2017)

Hospital Data Environment
- 7 QLD hospitals actively using from 2017 through to present
- Utilises internal data storage system

Desktop Computer

Tablet/Phone

SIMS

Florey Ecosystem

AuSCR API
(Automated)

AuSCR
Australian Stroke Clinical Registry

Follow-ups

Reporting

QI/Insights

Automated transfer process

Timely data transfer

Standardised mapping

Encrypted & Secure

Nationally recognised data model & Data Dictionary

Future objective:

- Queensland Health centralised integrated electronic medical record system (iEMR)

- Fields aligned with AuSCR to allow extraction of data

Future vision for automated Data Flow

Summary

- Data does improve patient outcomes

- Lived experience perspective is key

- Challenges for CQR

- Technology

Acknowledgements

Thank you to all the hospitals that participate in the National Stroke Audit, AuSCR and clinicians who contributed to data collection

DR LISA MURPHY
Interim Stroke Foundation CEO

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Stroke Foundation
support our stroke
community.**

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today!**