

The Quality in Acute Stroke Care (QASC) Implementation Project:

Scale up and spread of research evidence in 36 NSW stroke services

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McElduff P, D'Este C, Cadilhac D

On behalf of the QASCIP Working Group and Steering Committee

Sept 2014

Background

In the first days of an acute stroke:



**> 37.5°C in
20-50%
patients¹**



**Up to
68% become
hyperglycaemic²**



**37- 78%
experience
dysphagia³**

All result in increased morbidity and mortality and enlarged infarct size

¹ Azzimondi et al. *Stroke*.1995

² Scott et al. *Stroke*. 1999

³ Martino et al. *Stroke*. 2005

- Implemented and evaluated a behaviour change intervention to improve management of **fever, hyperglycaemia** and **swallowing dysfunction** in patients following acute stroke
- 19 acute stroke units in NSW
- 1696 patients

QASC Trial - Intervention

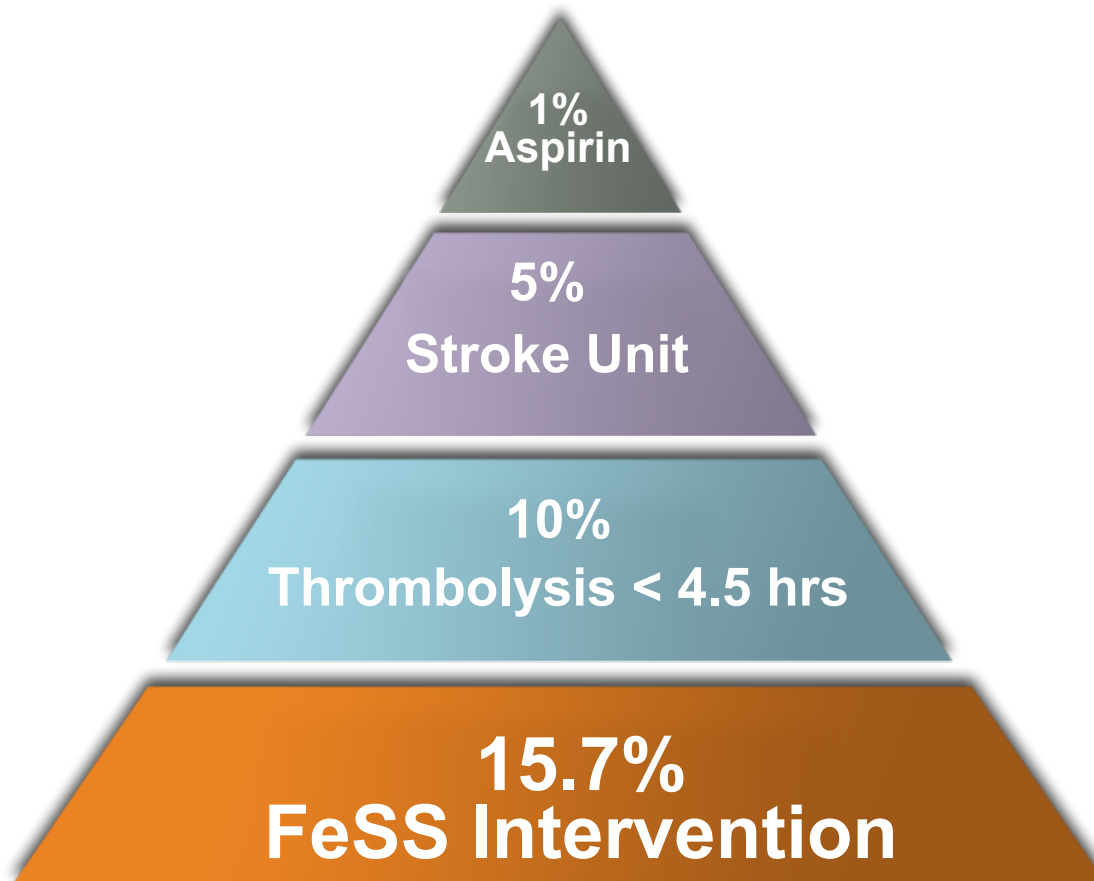
- ***Clinical protocols:*** to manage **Fever, Sugar and Swallowing** (FeSS protocols)
- ***Implementation strategy:***
 - i) Multidisciplinary workshops to assess **barriers and enablers**, reinforce teamwork and provide training
 - ii) Interactive **education** meetings
 - iii) **Reminders** (site visits, telephone and email support)

QASC Trial - Results



- **15.7 % more likely to be alive and independent** (mRS) 90 days post-stroke ($p=0.002$)
- **lower mean temperature** in first 72 hours of stroke unit admission ($p=0.001$)
- **lower mean blood glucose** levels in first 72 hours of stroke unit admission ($p=0.02$)
- **improved swallow screening** within 24 hours of stroke unit admission ($p<0.001$)
- decreased length of stay ($p>0.144$) (13.7 days v 11.3 days)

Clinical Significance



THE LANCET

Vol. 378 (9804), 2011

Vol. 378 No 9804

Articles

Implementation of evidence-based treatment protocols to manage fever, hyperglycaemia, and swallowing dysfunction in acute stroke (QASC): a cluster randomised controlled trial



Sandy Middleton, Patrick McElduff, Jeanette Ward, Jeremy M Grimshaw, Simeon Dale, Catherine D'Este, Peta Drury, Rhonda Griffiths, N Wah Cheung, Clare Quinn, Malcolm Evans, Dominique Cadilhac, Christopher Levi, on behalf of the QASC Trialists Group

Middleton S, McElduff P, Ward J, Grimshaw JM et al. Implementation of evidence-based treatment protocols to manage fever, hyperglycaemia, and swallowing dysfunction in acute stroke (QASC): a cluster randomised controlled trial. *The Lancet* 2011; 378(9804): 1699-1706

The Project



NRI NURSING
RESEARCH
INSTITUTE
St Vincent's Health Australia, Sydney | Australian Catholic University



ACI NSW Agency
for Clinical
Innovation



strokefoundation



QASC | Implementation
Project

Translational quality improvement project

Running from April 2013 - June 2014

Aim




- To implement the FeSS clinical treatment protocols in all 36 stroke services in NSW

FeSS Clinical Protocols

Fever

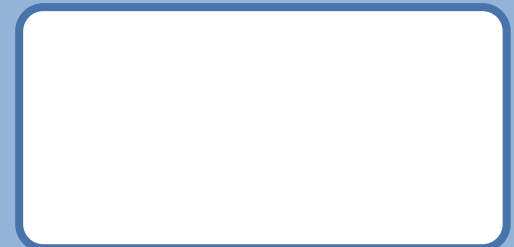
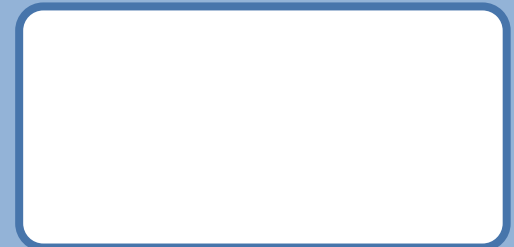


Sugar



**Glucose >10 mmols/L:
Treat with insulin**

Swallowing



Method



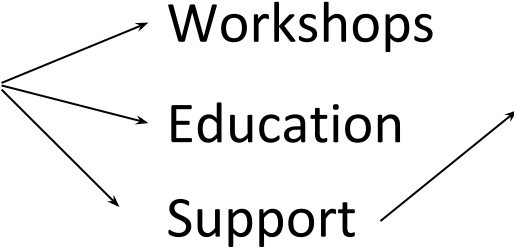
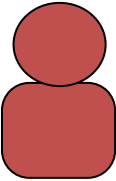
- Design: Pre and post-intervention
- Recruitment letters: ‘top down’ and ‘bottom up’
- Written consent to:
 - identify 2-3 key clinical stroke champions
 - conduct 40 pre-intervention and 40 post-intervention medical record audits
- **Evaluation:** Unique and novel collaboration with the **National Stroke Foundation** as using their clinical audit tool and methods (Reliability cases [n=269, 11.5%])

Intervention

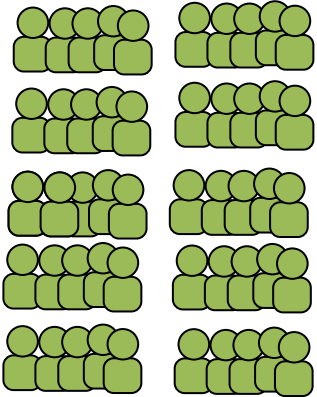
TRIAL



n=10 intervention sites



Visits to each site every 6 weeks

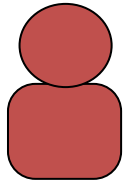


Intervention

TRIAL

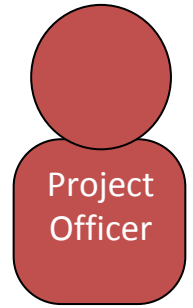
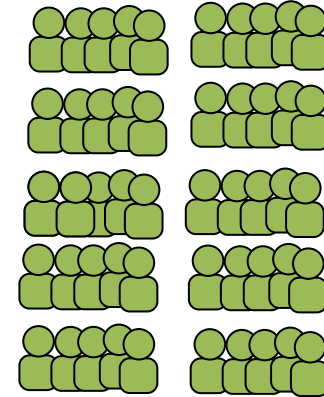


n=10 intervention sites



Workshops
Education
Support

Visits to **each** site every 6 weeks

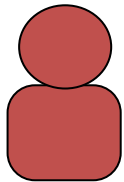


Project Officer

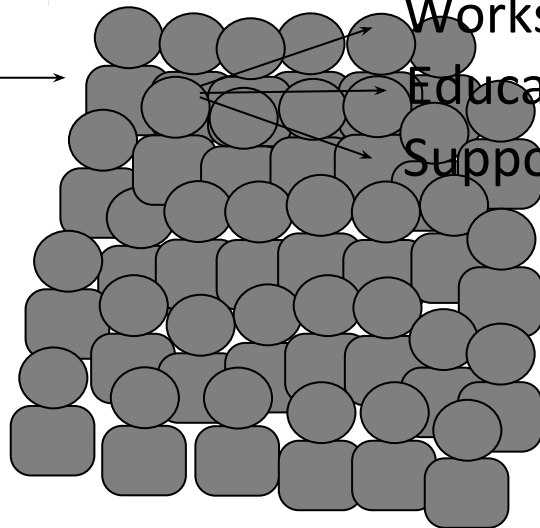
IMPLEMENTATION



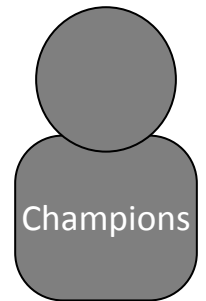
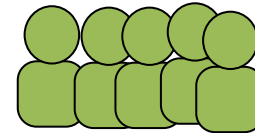
n=36 sites (implementation)



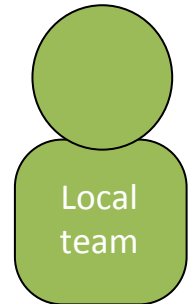
Workshop for site champions



Workshops
Education
Support



Champions



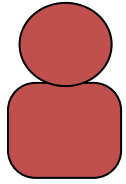
Local team

Intervention

TRIAL

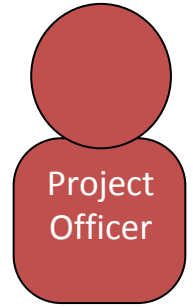
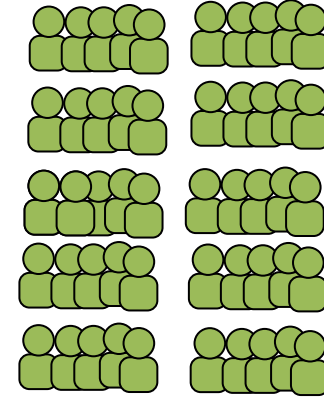


n=10 intervention sites



Workshops
Education
Support

Visits to **each** site every 6 weeks

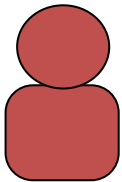


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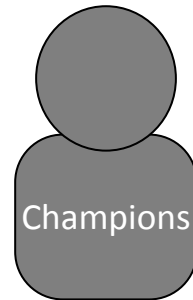
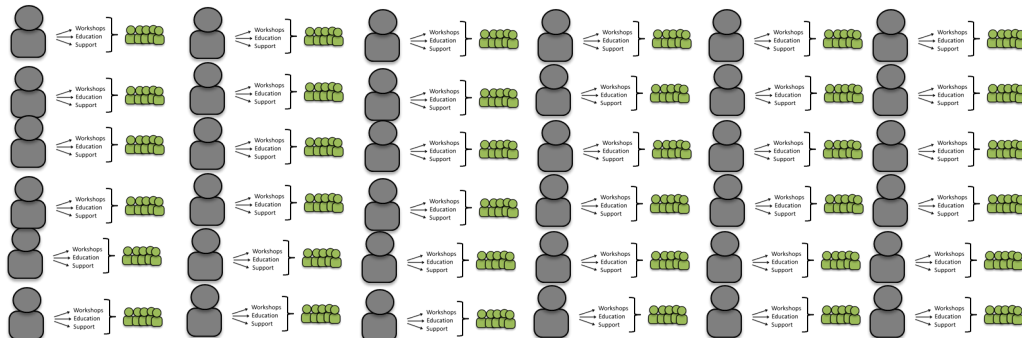
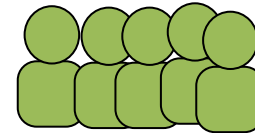
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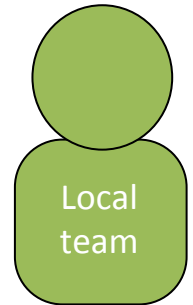
One education workshop for site champions



Workshops
Education
Support



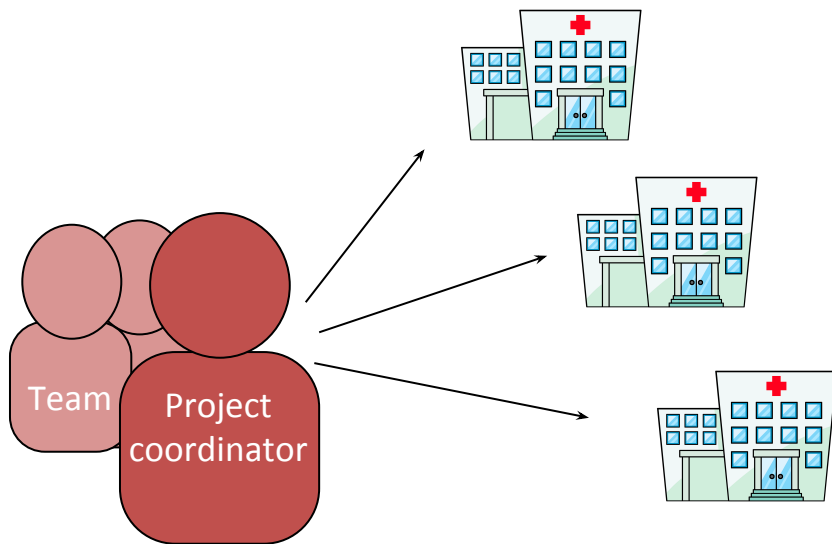
Champions



Local team

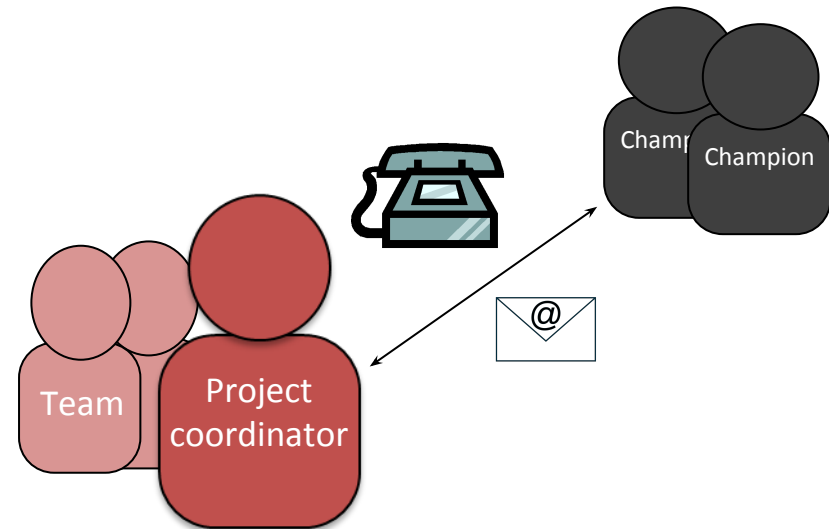
QASC Implementation Team Support

1



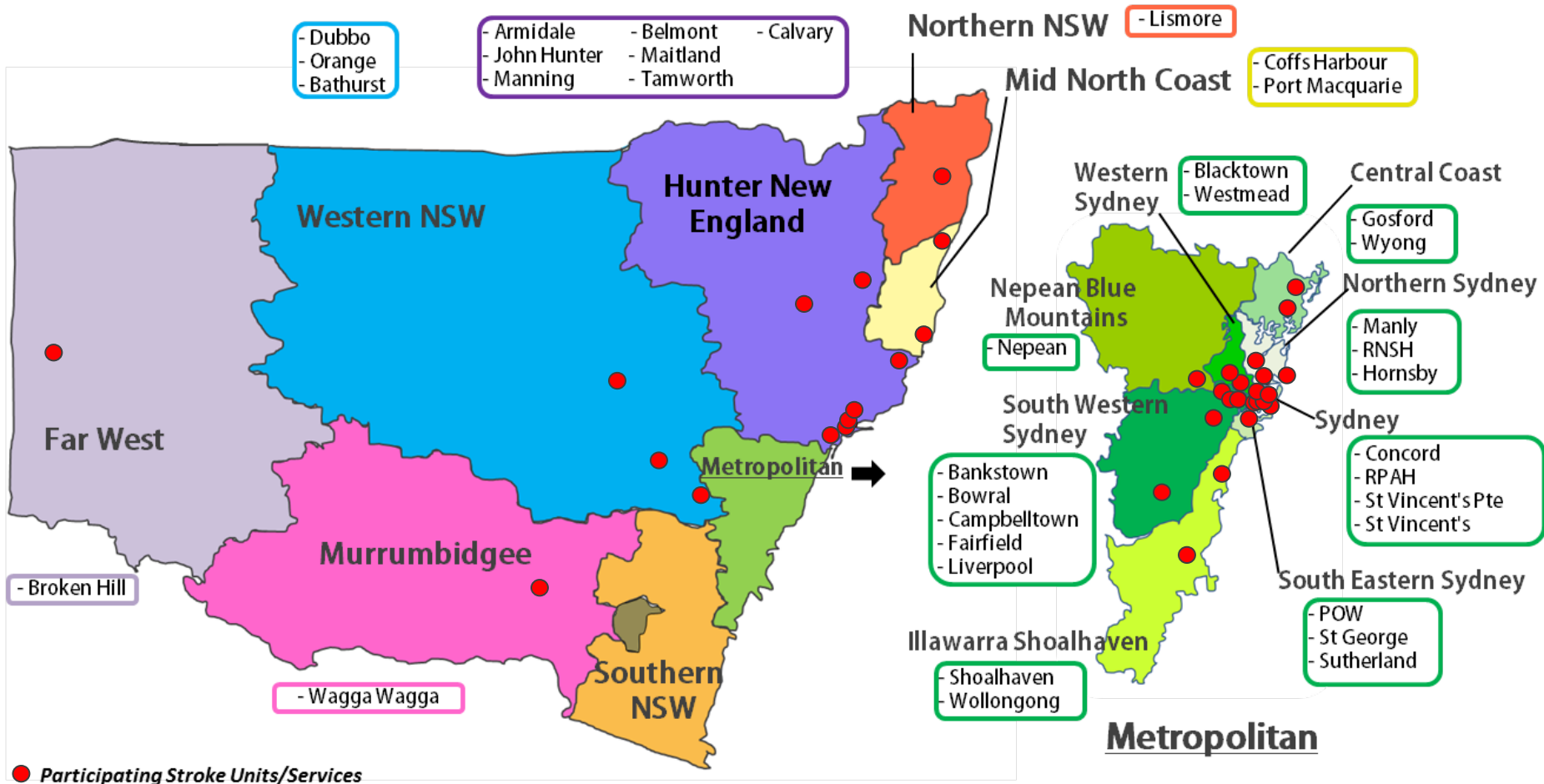
- Project coordinator and QASC Implementation Team site visits

2



- Ongoing support via phone and email

Participating stroke units/services in NSW



Results

Post-audit: 36 hospitals (n=1082)

June 2014 (14 months)

Hospital Demographics *

| | Total hospitals (n=36) |
|------------------------------------------------------------|---------------------------------------|
| Metropolitan hospitals | 32 (89%) |
| Hospitals with a Specialist Stroke Unit | 31 (86%) |
| Hospitals with an agreed management protocol for Swallow | 35 (97%) |
| Hospitals with a regular stroke MDT meetings | 34 (94%) |
| Hospitals with a clinical care pathway for managing stroke | 33 (92%) |
| Hospitals with an agreed management protocol for Fever | 32 (89%) |
| Hospitals with an agreed management protocol for Glucose | 30 (83%) |
| Hospitals that use the ASSIST tool | 28 (78%) |

* Data taken from the NSF Organisation Audit 2013

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Demographics

| | Pre-audit (n=1062) | Post-audit (n=1082) | P-value |
|----------------------------------|-----------------------|------------------------|---------|
| Age | | | |
| Less than 65 | 260 (25%) | 241 (22%) | 0.201 |
| 65 to 74 | 247 (24%) | 252 (23%) | |
| 75 to 84 | 349 (33%) | 350 (33%) | |
| Over 85 | 193 (18%) | 232 (22%) | |
| Gender | | | |
| Male | 584 (56%) | 599 (55%) | 0.848 |
| Female | 468 (44%) | 483 (45%) | |
| mRS (≥ 2) | | | |
| Pre-morbid | 351 (35%) | 350 (34%) | 0.776 |

| Fever | | | |
|---------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------|----------------|
| | Pre-audit (n=1062) | Post-audit (n=1086) | P-value |
| Number of patients monitored according to protocol for fever | 793 (76%) | 906 (84%) | 0.003 |
| Given paracetamol within 1 hour of their first febrile event (temp $\geq 37.5^{\circ}\text{C}$) | 57/148 (38%) | 64/135 (47%) | 0.083 |
| Protocol adherence | 729 (69%) | 845 (78%) | 0.003 |

Hyperglycaemia

| | Pre-audit (n=1062) | Post-audit (n=1086) | P-value |
|-------------------------------------------------------------------------------------|-------------------------------|--------------------------------|----------------|
| Number of patients monitored according to protocol for hyperglycaemia | 299 (28%) | 424 (39%) | 0.014 |
| Received insulin within 1 hour of their finger-prick glucose level >10mmol/L | 41/186 (22%) | 56/205 (27%) | 0.300 |
| Protocol adherence | 240 (23%) | 363 (34%) | 0.009 |

Swallowing

| | Pre-audit (n=1062) | Post-audit (n=1086) | P-value |
|-------------------------------------------------------------------------------------------|-----------------------|------------------------|--------------|
| Number of patients monitored according to protocol for swallowing | 454 (43%) | 565 (52%) | 0.027 |
| For those who failed the screen, received a swallowing assessment by a Speech Pathologist | 173/178 (97%) | 218/230 (95%) | 0.249 |
| Protocol adherence | 450 (42%) | 556 (51%) | 0.033 |

Summary

Increased proportions of patients received care (monitoring and treatment) according to the **FeSS** protocols state-wide:

Fever: (pre: 69%; post: 78%; $P=0.003$)

Sugar: (pre: 23%; post: 34%; $P=0.009$)

Swallowing: (pre: 42%; post: 51%; $P=0.033$)

Limitations/ Challenges

- Self-reported audit data
- Tight project timeline
 - Recruitment, training, implementation, evaluation, individual site reports and final report to ACI all within 14 month timeframe

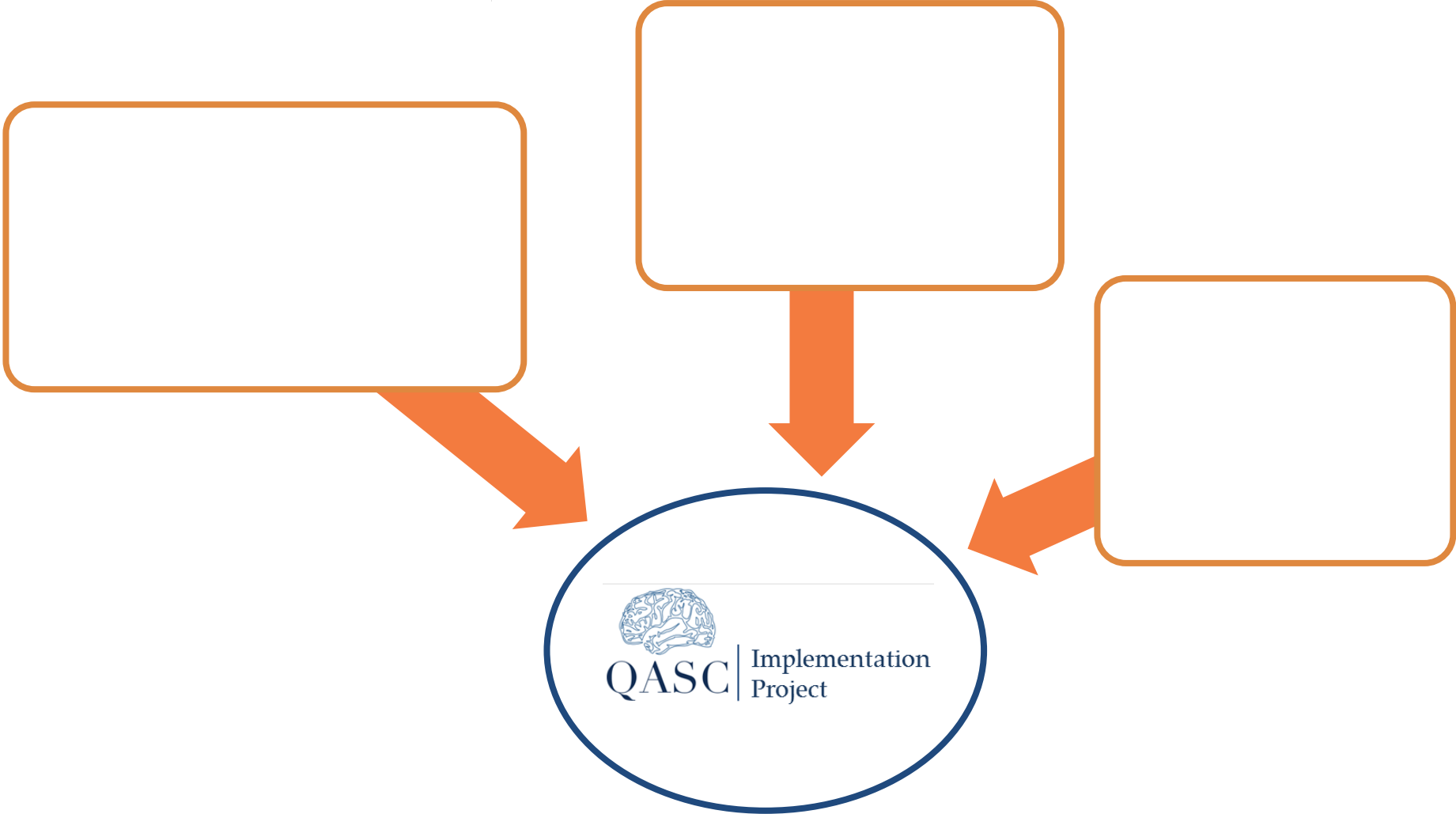
Challenges: Scale up and spread



| | QASC Trial | QASC Implementation |
|---------|--------------|---------------------|
| Length | 5 years | 14 months |
| Scope | 10 sites | 36 sites |
| Setting | Stroke units | Stroke services |

Challenge: Intervention fidelity

So What?



Acknowledgements

- Clinical site champions
- NSW Agency for Clinical Innovation
- National Stroke Foundation
- QASC implementation team

Questions?

