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

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


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% patients\(^1\)
- Up to 68% become hyperglycaemic\(^2\)
- 37- 78% experience dysphagia\(^3\)

All result in increased morbidity and mortality and enlarged infarct size

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QASC Trial

• 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
• **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

15.7% FeSS Intervention

10% Thrombolysis < 4.5 hrs

5% Stroke Unit

1% Aspirin
The 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

- Temperature >37.5°C: treated with paracetamol
- Formal venous glucose on admission
- 1-6 hourly finger-prick glucose for 72 hours
- Glucose >10 mmols/L: Treat with insulin

Swallowing

- Education program and online competency assessment
- Screen within 24 hours of stroke unit admission and before oral intake
- Referral to speech pathologist for full assessment for those who failed the screen
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

n=10 intervention sites

- Workshops
- Education
- Support

Visits to each site every 6 weeks
Intervention

**QASC Quality in Acute Stroke Care**

**n=10 intervention sites**
- Workshops
- Education
- Support
- Visits to each site every 6 weeks

**TRIAL**

**n=36 sites (implementation)**
- Workshops
- Education
- Support

**IMPLEMENTATION**

Workshop for site champions

**QASC Implementation Project**

**Local team**

**Champions**

**Project Officer**
Intervention

**TRIAL**

- n=10 intervention sites
- Workshops
- Education
- Support
- Visits to each site every 6 weeks

**IMPLEMENTATION**

- n=36 sites (implementation)
- Workshops
- Education
- Support
- One education workshop for site champions
QASC Implementation Team Support

- Project coordinator and QASC Implementation Team site visits

- Ongoing support via phone and email
Participating stroke units/services in NSW
Results

Project Completion: June 2014 (14 months)

Post-audit: 36 hospitals (n=1082)

June 2014 (14 months)
<table>
<thead>
<tr>
<th>Hospital Demographics *</th>
<th>Total hospitals (n=36)</th>
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<td>31 (86%)</td>
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### Demographics

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<tr>
<th>Age</th>
<th>Pre-audit (n=1062)</th>
<th>Post-audit (n=1082)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 65</td>
<td>260 (25%)</td>
<td>241 (22%)</td>
<td>0.201</td>
</tr>
<tr>
<td>65 to 74</td>
<td>247 (24%)</td>
<td>252 (23%)</td>
<td></td>
</tr>
<tr>
<td>75 to 84</td>
<td>349 (33%)</td>
<td>350 (33%)</td>
<td></td>
</tr>
<tr>
<td>Over 85</td>
<td>193 (18%)</td>
<td>232 (22%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Pre-audit (n=1062)</th>
<th>Post-audit (n=1082)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>584 (56%)</td>
<td>599 (55%)</td>
<td>0.848</td>
</tr>
<tr>
<td>Female</td>
<td>468 (44%)</td>
<td>483 (45%)</td>
<td></td>
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</tbody>
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<table>
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<tr>
<th>mRS (&gt;2)</th>
<th>Pre-morbid (n=1062)</th>
<th>Post-morbid (n=1082)</th>
<th>P-value</th>
</tr>
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<tr>
<td>Pre-morbid</td>
<td>351 (35%)</td>
<td>350 (34%)</td>
<td>0.776</td>
</tr>
<tr>
<td></td>
<td>Pre-audit (n=1062)</td>
<td>Post-audit (n=1086)</td>
<td>P-value</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------------</td>
<td>---------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Number of patients monitored according to protocol for fever</td>
<td>793 (76%)</td>
<td>906 (84%)</td>
<td>0.003</td>
</tr>
<tr>
<td>Given paracetamol within 1 hour of their first febrile event (temp &gt;=37.5°C)</td>
<td>57/148 (38%)</td>
<td>64/135 (47%)</td>
<td>0.083</td>
</tr>
<tr>
<td>Protocol adherence</td>
<td>729 (69%)</td>
<td>845 (78%)</td>
<td>0.003</td>
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### Hyperglycaemia

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<th>Post-audit (n=1086)</th>
<th>P-value</th>
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</thead>
<tbody>
<tr>
<td>Number of patients monitored according to protocol for hyperglycaemia</td>
<td>299 (28%)</td>
<td>424 (39%)</td>
<td>0.014</td>
</tr>
<tr>
<td>Received <strong>insulin within 1 hour</strong> of their finger-prick glucose level &gt;10mmol/L</td>
<td>41/186 (22%)</td>
<td>56/205 (27%)</td>
<td>0.300</td>
</tr>
<tr>
<td>Protocol adherence</td>
<td>240 (23%)</td>
<td>363 (34%)</td>
<td>0.009</td>
</tr>
<tr>
<td></td>
<td>Pre-audit (n=1062)</td>
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<td>--------------------------------</td>
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</tr>
<tr>
<td>Number of patients monitored according to protocol for swallowing</td>
<td>454 (43%)</td>
<td>565 (52%)</td>
<td>0.027</td>
</tr>
<tr>
<td>For those who failed the screen, received a swallowing assessment by a Speech Pathologist</td>
<td>173/178 (97%)</td>
<td>218/230 (95%)</td>
<td>0.249</td>
</tr>
<tr>
<td>Protocol adherence</td>
<td>450 (42%)</td>
<td>556 (51%)</td>
<td>0.033</td>
</tr>
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</table>
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

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<tr>
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<th>QASC Trial</th>
<th>QASC Implementation</th>
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<tr>
<td>Length</td>
<td>5 years</td>
<td>14 months</td>
</tr>
<tr>
<td>Scope</td>
<td>10 sites</td>
<td>36 sites</td>
</tr>
<tr>
<td>Setting</td>
<td>Stroke units</td>
<td>Stroke services</td>
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Challenge: Intervention fidelity
So What?

Working closely with the NSF to link with their audit (sustainability) 'Rapid' evidence into practice? 2011 to 2014 Collaboration ACI/NRI/NSF/LHDs
Acknowledgements

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

Questions?

QASC Implementation project

QASC
Quality in Acute Stroke Care