Title	**Fever, Hyperglycaemia (Sugar), Swallow (FeSS) clinical guidelines adherence: analysis of national audit data and stroke registry data**
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Summary	Facilitated implementation of a nurse-led intervention to manage fever, hyperglycaemia and swallowing (FeSS protocols) in stroke units was shown to reduce death and disability (15.7% adjusted absolute difference) at 90 days post-stroke for patients in the Quality in Acute Stroke Care (QASC) Trial.[1] This effect was sustained, with over 20% of patients more likely to be alive four years following their stroke.[2] Subsequent state-wide scale-up of the protocols in the Quality in Acute Stroke Care Implementation Project (QASCIP) during 2013-2014 demonstrated improvements in protocol adherence.[3] The effectiveness of the FeSS protocols in the Triage, Treatment, and Transfer (T3 Trial) was later evaluated between 2013 and 2016, however it did not change patient outcomes in the emergency department setting.[4] As a result of this work, a 'Strong Recommendation' to support use of the FeSS Protocols was included in the 2017 Clinical Guidelines for Stroke Management.5 Recently, adherence to the FeSS protocols was evaluated across Australia using data from the National Acute Services Stroke Audit. While findings demonstrated increased uptake over a 4-year period (2013- 2017), a significant evidence-practice gap remained.[6] Fever, hyperglycaemia and swallow management was shown to be sub-optimal with only 41% of patients receiving all FeSS processes in 2017, and over half of those with fever and three in five with hyperglycaemia did not receive timely paracetamol and insulin, respectively.[6] While information related to swallow processes has been included in national guidelines since 2007, recommendations related to the fever and hyperglycaemia FeSS protocols were only just included in 2017.[5] Hence, there is a need to further assess protocol adherence beyond 2017 and the impact of the new guideline recommendations on reducing the evidence-practice gap using both the National Acute Stroke Services audit data as well as the new optional dataset specific to the FeSS variables in the Australian Stroke Clinical Registry (AuSCR) (available from July 2019 onwards). The literature suggests that sustainability of professionals' adherence to clinical practice guidelines in medical care after an intervention trial tends to decrease after one year.[7] This is highly variable as reported by Purvis et al (2019) who found greater uptake of FeSS protocols in hospitals that participated in the original FeSS intervention trials, QASC and QASCIP, up to six years post the original trial.6 The aim of this research is to determine adherence to the FeSS Protocols since their inclusion as recommended care in the 2017 National Acute Stroke Guidelines and to determine whether participation in any of the previous FeSS Intervention studies (QASC, QASCIP or T3 Trial) improved adherence when compared with hospitals who did not participate and to determine whether improvements have been sustained over time. **Aims and objectives** Primary Aim 1. To examine if FeSS Protocol adherence in Australian hospitals has improved since explicit recommendations for their use were included in the 2017 Australian Clinical Guidelines for Stroke Management by comparing data from 2015-2017 (pre-inclusion) with data from 2019-2021 (postinclusion). Secondary Aims 2. To examine if adherence to the FeSS protocols is greater for patients admitted to hospitals who previously participated in the QASC or QASCIP studies and if this positive association is also true for patients admitted to hospitals who had previously participated in the T3 trial. 3. To examine if FeSS Protocol adherence is greater for patients admitted to a stroke unit when compared with patients admitted to hospitals without a stroke unit (stroke service only).

Methods A cross-sectional study will be undertaken using the retrospective clinical data from hospitals participating in the biennial National Acute Services Stroke Audit (2015, 2017, 2019 and 2021) and prospective continuous data from the Australian Stroke Clinical Registry (1/7/2019-31/12/2020). All patients with a primary diagnosis of stroke (ischaemic or haemorrhagic) aged ≥18 years will be included. Those patients that have been documented for palliative care will be excluded from analysis. Where available, all indicators of adherence to the FeSS protocols will be collected and evaluated to assess uptake of specific components of the FeSS protocols into clinical practice. An overall process of care outcome (reflecting adherence to all FeSS protocol indicators) will be derived as a composite measure.

References

1. Middleton S, McElduff P, Ward J, et al. Implementation of evidence-based treatment protocols to manage fever, hyperglycaemia, and swallowing dysfunction in acute stroke (QASC): a cluster randomised controlled trial. Lancet 2011; 378: 1699-1706. 2011/10/15. DOI: 10.1016/S0140-6736(11)61485-2.
2. Middleton S, Coughlan K, Mnatzaganian G, et al. Mortality Reduction for Fever, Hyperglycemia, and Swallowing Nurse-Initiated Stroke Intervention: QASC Trial (Quality in Acute Stroke Care) Follow-Up. Stroke 2017; 48: 1331-1336. 2017/04/09. DOI: 10.1161/STROKEAHA.116.016038.
3. Middleton S, Lydtin A, Comerford D, 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/posttest study design. BMJ Open 2016; 6: e011568. 2016/05/08. DOI: 10.1136/bmjopen-2016-011568.
4. Middleton S, Grimley R and Alexandrov AW. Triage, treatment, and transfer: evidence-based clinical practice recommendations and models of nursing care for the first 72 hours of admission to hospital for acute stroke. Stroke 2015; 46: e18-25. 2015/01/08. DOI: 10.1161/STROKEAHA.114.006139.
5. Stroke Foundation. Clinical Guidelines for Stroke Management. 2017. Melbourne Australia.
6. Purvis T, Middleton S, Craig LE, et al. Inclusion of a care bundle for fever, hyperglycaemia and swallow management in a National Audit for acute stroke: evidence of upscale and spread. Implement Sci 2019; 14: 87. 2019/09/04. DOI: 10.1186/s13012-019-0934-y.
7. Ament SM, de Groot JJ, Maessen JM, et al. Sustainability of professionals' adherence to clinical practice guidelines in medical care: a systematic review. BMJ Open 2015; 5: e008073. 2015/12/31. DOI: 10.1136/bmjopen-2015-008073.