

Question 58 evidence tables

Question 58: For acute stroke patients receiving nutrition via a nasoenteric feeding tube, does a nasal bridle, mittens or other restraining device improve outcomes compared with not using any device?

NB Any discrepancies between reviewers in evidence quality and comment were discussed at the corresponding evidence review meeting

NGT = nasogastric tube, NG = nasogastric, NJ = nasojejunal, EN = enteral nutrition, ICU = intensive care units, SR = systematic review, MA = meta-analysis, RCT = randomised controlled trial, IPDMA = individual patient data meta-analysis, MDT = multidisciplinary team, PICO = patient/population, intervention, comparison and outcomes, OR = odds ratio, CI = confidence interval, QoL = quality of life, ADL = activities of daily living, OR = odds ratio, RR = relative risk, aOR = adjusted odds ratio, cOR = crude odds ratio, CI = confidence interval, RoB = risk of bias, I² = heterogeneity statistic.

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
266	S. Brazier et al. (2017). Stroke: ineffective tube securement reduces nutrition and drug treatment. <i>British journal of nursing (Mark Allen Publishing)</i> , 26:12 656-663	United Kingdom, urban public healthcare setting. Before-After study/interrupted time series. N=75. Acute stroke patients (n=74), acute Huntington's chorea (n=1). Age = 71.6 - 87.9 years. 41.3% male, 59.7% female.	Audit of NGT placements on an acute stroke unit to determine efficacy of securement method.	In 4 month period, number of placements of 10fr NGT. Tracked (in working hours) and untracked (outside working hours). Securement of NG described, tape, tape & mitten and tape, mitten and specialling. Also measured: reasons for tube removal, method of confirmation, delays incurred, costing of disposables and overall cost of maintaining enteral nutrition (EN). Proposed cost savings should bridles have been utilised also included.	Over 4 month period, 202 placements (20% tracked, within working hours), in 75 patients. Securement methods: 63.4% tape, 31.2% tape and mitten, 5.4% tape, mitten and specialling. 124 (73%) inadvertent tube removals, of which 64% deemed due to patient and 9% due to slippage. 12% patients requiring 1 tube, 29% requiring 2 and 59% requiring 3 or more tubes. Average 'tube life' of 2 days compared to EN episode of 8.5 days. Average cost of EN £351.70 for 8.5 days.	N/A Before and after/time interrupted studies. This before/after time interrupted study presents information from a UK based acute stroke ward on total NGT used within a 4-month period, with the absence of nasal bridle usage. The authors predict that bridle usage could result in less NGT insertions therefore reduce costs, delays in feed/medication provision and improve patient experience. This article is limited to presentation of descriptive data for a small sample size in one location, focusing on the effect of particular tube securement methods. Estimations are used

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
						for potential benefits of using nasal bridles.
266	S. Brazier et al. (2017). Stroke: ineffective tube securement reduces nutrition and drug treatment. <i>British journal of nursing (Mark Allen Publishing)</i> , 26:12 656-663	<p>Setting: Southmead hospital, Bristol, England</p> <p>Design: prospective observational study (described as an audit by the authors but nil comparison to guidelines/standards).</p> <p>Subjects: Patients requiring NG tube placement on an acute stroke ward over a 4-month period. Primary diagnosis was stroke (n=74) and Huntington's chorea (n=1). Median age 79.9, 41.3% patients were male, median NIHSS score 15</p> <p>202 NG placements over 75 patients.</p> <p>Data was collected prospectively for 17 'tracked' patients (40 tube placements) and retrospectively for 58 patients (162 tube placements).</p> <p>All patients started with tape. Mittens were then used where patients were deemed at most risk of inadvertent tube removal and mittens + 1:1 'specialling' were used where the risk was greatest.</p>	<p>Securement method of NG tube</p> <p>Total tubes (n=202): - Tape (n= 128) - Tape + mitten (n=63) - Tape + mitten + 1:1 specialling (n=11)</p> <p>Tracked tubes (n=40) - Tape (n= 27) - Tape + mittens (n=8) - Tape +mitten+1:1 specialling (n=5)</p> <p>'n' refers to tube placements</p>	<p>Inadvertent tube loss</p> <p>Cost</p>	<p>Inadvertent tube removals by patients were associated with increasing age (p=0.049) and use of mittens (p<0.001)</p> <p>A patient using mittens was more likely to remove their tube even once age was adjusted for (odds ratio =8.51, 95% confidence interval: 3.62, 24.99, p <0.001).</p> <p>Cost - the authors estimated that had bridles been placed in the 17 tracked patients, only 1 instead of 5 patients would have needed specialling saving £2712, a 55% saving.</p>	<p>SIGN -</p> <p>Overall a low quality study which does not provide any robust data regarding the use of NG bridles or other restraining devices on outcomes.</p> <p>Higher rate of tube removal with mittens is likely to reflect that mittens had been used in patients who were more likely to remove their tube.</p> <p>Authors felt the data on tube loss from the 17 tracked patients would be representative of the full sample. Infection rate twice as high in tracked patients so rate of inadvertent tube removal may be over-estimated.</p> <p>Protocol for how and when mittens +/- specialling was used not included.</p> <p>Costing - I would question whether patients requiring both mittens and specialling would be safe candidates for bridles once 1:1 was discontinued.</p>

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
		Mixed effects regression model used				
267	A. Lynch et al. (2018). A systematic review of the effectiveness and complications of using nasal bridles to secure nasoenteral feeding tubes. <i>Australian Journal of Otolaryngology; Vol 1, No 1 (January 2018): Australian Journal of Otolaryngology, :</i>	Systematic review (SR), n=>1038, 18 studies included. Populations studied: Dysphagic stroke patients, Gastrointestinal nutrition support patients requiring nasojejunal (NJ) feeding, NJ fed patients in surgical or burns intensive care units (ICU), cadaveric sheep, non-specified inpatients, elderly care inpatients, head and neck surgical patients, paediatric burns patients. No other demographic information available.	Beaven et al. (2010); bridle (n=51) v adhesive tape (control) (n=53). Hegazi et al. (2008), bridle (n=37) v conventional group, not specified (n=37). Brandt and Mittendorf (2004), bridle (n=24) v control group, not specified (n=48). Al-Hussaini et al. (2014), bridle (n=10) v anterior septal suture (n=10). Cheung et al. (2009), bridle (n=48) and control, not specified (n=48). Donaldson et al. (2007), bridle, control not specified (n=96). Power et al. (2010), bridle, control not specified (n=28). Bechtold et al. MA of bridle (n=203) v tape (n=341). Seder et al. (2010), bridle (n=40) v adhesive (n=40) device. Anderson et al. (2004), bridle, control not specified (n=14). Johnston et al. (2008), bridle, control not	Nasoenteral tube dislodgement, in-dwelling time, delivery of targeted nutrition, imagine, cost, complications, pain and distress, mortality and morbidity post-acute stroke.	Beaven et al. (2010) - less NGT and CXR usage in bridle group. 17% more feed delivered in bridle group compared to adhesive tape (16,994ml v 11,367ml). More nasal bleed, pressure areas or nasal discharge in bridle group (37% v 15%). Less discomfort in bridle group (28v41%). More distress prevalent in bridle group (44v39%). No significant difference in mortality and morbidity between groups (80% bridle v 89% adhesive tape. Hegazi et al. (2008) - tube dislodgement 32% v 62% in conventional group, nasal ulcers 19.5% in bridle group v 62% in conventional group. Brandt and Mittendorf (1999) - 4v37% tube dislodgement in bridle v conventional. Al-hussaini et a. (2014) - bridles able to sustain weight of 15.5kg v 4.5kg anterior septal suture. Cheung et al. (2009) - feed delivery of <50% = 67.3% patient days in conventional group v 13.4% in bridle group. Donaldson et al. (2007) - Feed delivery increased from 20% to 98% after routine bridling. PEG related mortality fell from	+ SIGN checklist 1: SR and MA. Nil inclusion of age, sex race, SES data on patients included, however details on status, disease, severity included.

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
			<p>specified (n=53). Parks et al. (2013), bridle v adhesive tape, total n=50. Seder and Janczyk (2008), bridle (n=62) v adhesive tape (n=172). Lang et al. (2010), bridle, control not specified (n=12). Al-Khudari et al. (2010), bridle v septal suture, total sample size n=79. Results only including bridle (n=45) v septal suture (n=29). Brugnolli et al. (2014), systematic review of devices used to secure NG tubes, nil total sample size recorded. Hardy et al. (2012), bridle (control not specified), sample size not recorded. Gunn et al. (2009), bridle (n=40) v tape (n=50).</p>		<p>16% to 6%. Power et al. (2010) - 93 feed tubes dislodged v 4 in bridle v control group. 21% incidence of epistaxis in bridle group. Bechtold et al - 14% v 40% dislodgement, control v bridle. 13v3% irritation v ulceration in bridle v tape group. 0v5% sinusitis in bridle v tape group. Seder et al (2010) - 18v63% dislodgement in bridle v control. 78v62% feed delivery in bridle v control. 9v6 days dwelling time bridle v control. 10v0% nasal ulceration in bridle v control. 0v5% sinusitis in bridle v control. Anderson et al. (2004) - median 4 NG replacements prior to bridling, 14% dislodgement post bridle. 0v100% feed delivery pre v post bridle. Johnston et al. (2008) - 7% incidence of epistaxis during bridle insertion. PEG related mortality reduced from 28% to 11% after routine bridling implementation. Parks et al. (2013) - Tube replacement 0.26 v 0.44 per tube day in bridle v tube group; 3.3x higher x-rays for control group. Seder & Janczyk (2008) - tube dislodgement 6.5v32.6% in bridle v control group, 6.5% nasal ulceration in bridle group. Lang et al. (2010) - 3.3v1.0 number of days tube</p>	

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
					<p>in situ in bridle v control. 33% epistaxis in bridle group. Al-Khudari et al. (2010) - tube dwelling time lower in control v bridle group. Brugnolli et al (2014) - no significant differences. Hardy et al. (2012) - 19v7% dislodgement following bridle implementation. Gunn et al. (2009) - 10v36% tube dislodgement in bridle v control group.</p>	