

# Comparing nasogastric and direct tube feeding in stroke

## Enteral feeding going down the tube

Marian Galovic, MD

*Neurology*® 2018;90:305-306. doi:10.1212/WNL.0000000000004970

### Correspondence

Dr. Galovic  
m.galovic@ucl.ac.uk

### RELATED ARTICLE

Outcomes among patients with direct enteral vs nasogastric tube placement after acute stroke

[Page 312](#)

Dysphagia is a silent killer after stroke. Swallowing disorders affect more than half of 800,000 people who have a stroke every year in the United States. Dysphagia frequently results in pneumonia, malnutrition, and dehydration, which can lead to increased mortality and poor outcome.<sup>1</sup> To prevent these complications, enteral tube feeding is indicated in selected cases. Tube feeding carries some risk and can lead to discomfort, local infections, bleeding, and the need to restrain patients. To balance risks and benefits, guidelines<sup>2,3</sup> recommend nasogastric tube (NGT) feeding if oral intake remains insufficient for 1 week or longer. If dysphagia persists for more than 4 weeks, patients warrant direct enteral tube (DET) feeding with percutaneous endoscopic gastrostomy (PEG) or jejunostomy.

Stroke survivors receive enteral nutrition frequently. Almost 1 in 10 will receive DET feeding and even more will have feeding through NGTs.<sup>4</sup> Despite the frequent use of these procedures, surprisingly little data exist on the long-term outcome in patients receiving enteral nutrition.

In this issue of *Neurology*®, Joundi et al.<sup>5</sup> shed light on long-term outcomes in stroke survivors receiving NGT or DET feeding. The authors used retrospective data of 37,870 people who had a stroke in Ontario, Canada. They carefully matched the characteristics of 1,421 people who received DET insertion with those of 1,421 people who received NGT alone. By balancing the study groups, they reduced the effects of baseline differences on their results and made it possible to infer the effects of feeding methods on outcomes after stroke.

The group receiving DET insertion had poorer long-term outcomes than those with NGT feeding alone. DET-fed patients had a higher risk of death more than 30 days after discharge (30–89 days, hazard ratio [HR] 1.4; 90–179 days, HR 2.2; 180–365 days, HR 1.6; 366–730 days, HR 1.3) and a higher overall 2-year mortality (41% vs 36%) compared to the NGT group. The DET group was also more likely to be readmitted for treatment of aspiration pneumonia (14% vs 5%), pressure ulcers (5% vs 2%), sepsis (8% vs 3%), and gastrointestinal hemorrhage (6% vs 4%) within 2 years after stroke compared to those receiving NGT alone. By contrast, the authors found lower mortality of DET-fed patients in the first 30 days after discharge. This was most likely due to the shorter length of hospital stay and more severe disability in the NGT-fed group. The differences in short-term outcome disappeared after controlling for these factors.

How do these striking results compare to other studies? A recent Cochrane review did not find a difference in mortality or pneumonia between PEG and NGT feeding.<sup>6</sup> Most of the included studies, however, were small, were heterogeneous, and had short follow-up. On the other hand, the largest and most robust randomized controlled trial (RCT) to date, the FOOD trial, found a borderline significant ( $p = 0.05$ ) 7.8% increase of death or poor outcome 6 months after stroke in people randomized to PEG feeding ( $n = 162$ ) compared to NGT feeding ( $n = 159$ ).<sup>7</sup>

By comparison, the nested case-control study by Joundi et al.<sup>5</sup> has a substantially larger sample size and longer follow-up than previous RCTs. Its main drawbacks are the retrospective approach and

From the Department of Clinical and Experimental Epilepsy, University College London Hospitals Biomedical Research Centre, National Institute for Health Research, UCL Institute of Neurology, London; Chalfont Centre for Epilepsy, Chalfont St. Peter, UK; and Department of Neurology, Kantonsspital St. Gallen, Switzerland.

Go to [Neurology.org/N](http://Neurology.org/N) for full disclosures. Funding information and disclosures deemed relevant by the author, if any, are provided at the end of the editorial.

lack of randomization, and one should thus interpret the results cautiously. Despite elegantly using propensity score matching to balance for baseline group differences, residual confounding may remain that the authors could not account for. In addition, there are few data on swallowing performance, timing of tube placement, and decisions leading to enteral feeding. The definition of complications based on readmission diagnoses can be prone to underreporting. In spite of these limitations, this large propensity-matched study provides valuable evidence and is the closest step towards a large RCT since the 2005 FOOD trial.<sup>7</sup>

There are several possible explanations for poor outcome in people with DET insertion. First, those with DET feeding might have had more severe or longer-lasting dysphagia, both factors that the authors could not correct for during the matching procedure. Second, DET feeding might have increased the survival of severely affected individuals in the short term, in turn leading to poorer outcome in the long term. Yet the results remained robust even after matching for dependency at discharge. There is, however, a potentially more serious third explanation. Could DET feeding itself impair long-term outcome? This notion gains support from similarly poor results in PEG-fed patients in the randomized FOOD trial.<sup>7</sup> DET feeding might restrict patients' mobility, impair their participation in rehabilitation, prolong institutionalization, and increase dependence on caregivers. People with DET insertion might be at higher risk of stress, depression, and local infections. More hypothetically, it is unknown whether clinicians and caregivers tend to be less proactive or less supportive in DET-fed patients compared to those with NGTs. All these factors could impair the prognosis of those with DET placement.

What do we learn from these findings? Interpretation of the results is, admittedly, difficult due to a number of possible confounders and alternative explanations. Expert panels will, nevertheless, need to incorporate these findings into their future recommendations for optimal feeding methods. Further research will need to elucidate the causes of poor outcome in people receiving DET feeding and develop strategies to prevent these complications. Finally, this study highlights the need for further sufficiently powered randomized controlled trials in dysphagic stroke.

## Study funding

No target funding reported.

## Disclosure

The author has nothing to disclose. Go to [Neurology.org/N](http://Neurology.org/N) for full disclosures.

## References

1. Martino R, Foley N, Bhogal S, Diamant N, Speechley M, Teasell R. Dysphagia after stroke: incidence, diagnosis, and pulmonary complications. *Stroke* 2005;36:2756–2763.
2. Kirby DF, Delegge MH, Fleming CR. American Gastroenterological Association technical review on tube feeding for enteral nutrition. *Gastroenterology* 1995;108:1282–1301.
3. Wirth R, Smoliner C, Jäger M, et al. Guideline clinical nutrition in patients with stroke. *Exp Transl Stroke Med* 2013;5:14.
4. George BP, Kelly AG, Schneider EB, Holloway RG. Current practices in feeding tube placement for US acute ischemic stroke inpatients. *Neurology* 2014;83:874–882.
5. Joundi RA, Saposnik G, Martino R, Fang J, Porter J, Kapral MK. Outcomes among patients with direct enteral vs nasogastric tube placement after acute stroke. *Neurology* 2018;90:e544–e552.
6. Gomes CAR, Andriolo RB, Bennett C, et al. Percutaneous endoscopic gastrostomy versus nasogastric tube feeding for adults with swallowing disturbances. *Cochrane Database Syst Rev* 2015;CD008096.
7. Dennis MS, Lewis SC, Warlow C; FOOD Trial Collaboration. Effect of timing and method of enteral tube feeding for dysphagic stroke patients (FOOD): a multicentre randomised controlled trial. *Lancet* 2005;365:764–772.

# Neurology<sup>®</sup>

## Comparing nasogastric and direct tube feeding in stroke: Enteral feeding going down the tube

Marian Galovic

*Neurology* 2018;90;305-306 Published Online before print January 24, 2018

DOI 10.1212/WNL.0000000000004970

### This information is current as of January 24, 2018

<b>Updated Information &amp; Services</b>	including high resolution figures, can be found at: <a href="http://n.neurology.org/content/90/7/305.full.html">http://n.neurology.org/content/90/7/305.full.html</a>
<b>References</b>	This article cites 6 articles, 2 of which you can access for free at: <a href="http://n.neurology.org/content/90/7/305.full.html##ref-list-1">http://n.neurology.org/content/90/7/305.full.html##ref-list-1</a>
<b>Permissions &amp; Licensing</b>	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: <a href="http://n.neurology.org/misc/about.xhtml#permissions">http://n.neurology.org/misc/about.xhtml#permissions</a>
<b>Reprints</b>	Information about ordering reprints can be found online: <a href="http://n.neurology.org/misc/addir.xhtml#reprintsus">http://n.neurology.org/misc/addir.xhtml#reprintsus</a>

*Neurology*® is the official journal of the American Academy of Neurology. Published continuously since 1951, it is now a weekly with 48 issues per year. Copyright © 2018 American Academy of Neurology. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.

