The Effect of Transdermal Glyceryl Trinitrate in Acute Stroke Patients with Carotid Stenosis: Data from the Efficacy of Nitric Oxide in Stroke

Jason P Appleton, Lisa J Woodhouse, Zhe Kang Law, Nikola Sprigg, Philip M Bath for the ENOS Investigators

BACKGROUND

- There is concern that blood pressure lowering in acute stroke may compromise cerebral perfusion and worsen outcome in the context of carotid stenosis.
- The effect of glyceryl trinitrate (GTN) on outcome in acute stroke patients with carotid stenosis is unclear.
- We sought to assess GTN’s effect in this context using data from the Efficacy of Nitric Oxide in Stroke (ENOS) trial.

METHODS

- ENOS randomised 4011 patients with acute stroke (<48 hours) and raised systolic BP (SBP>140 mmHg) to transdermal GTN patch (5 mg) or no GTN.
- The primary outcome was functional outcome (modified Rankin Scale, mRS) at day 90.
- Ipsilateral carotid stenosis was split: <30%; 30-<50%; 50-<70%; ≥70%.
- Bilateral carotid stenosis was split: <30%; 30-<50%; ≥50%.
- Data are odds ratios (OR) with 95% confidence intervals (CI) adjusted for baseline prognostic factors.

RESULTS

- 2023 (60.5%) ischaemic stroke participants had carotid imaging:
- Ipsilateral:**

	n	GTN	No GTN
<30%	1431	726	705
30-<50%	224	102	122
50-<70%	148	77	71
≥70%	213	94	119
- Bilateral:**

	n	GTN	No GTN
<30%	1287	650	637
30-<50%	115	52	63
≥50%	97	53	44
- Compared with participants with <30%, ≥70% ipsilateral stenosis was associated with an unfavourable shift in mRS at 90 days (OR 1.88, 95% CI 1.44-2.44, p<0.001).

RESULTS (Continued)

- Figure 1:** mRS at day 90 <30% vs. ≥70% ipsilateral stenosis

- Figure 2:** mRS at day 90 in those with ≥70% ipsilateral stenosis GTN vs. no GTN

- Those with ≥70% stenosis who received GTN had a favourable shift in mRS (OR 0.56, 95% CI 0.34-0.93, p=0.024) compared to those who received no GTN.
- Tendencies towards less dependency, albeit non-significant, were seen in 30-<50% and 50-<70% groups.
- No differences in mRS were seen across groups of bilateral stenosis or between those who received GTN vs. no GTN.

CONCLUSIONS

- Severe ipsilateral carotid stenosis is associated with poorer functional outcome at 90 days following ischaemic stroke.
- GTN appears safe in acute stroke patients with ipsilateral or bilateral carotid stenosis.