

Effect of transdermal glyceryl trinitrate on systolic blood pressure variability in acute stroke: data from the Efficacy of Nitric Oxide in Stroke (ENOS) trial

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Background: Increased blood pressure variability (BPV) is associated with poor outcome after stroke. We aimed to assess whether early change in BPV following stroke was associated with outcome in the Efficacy of Nitric Oxide in Stroke (ENOS) trial.

Methods: ENOS randomised 4011 patients with acute stroke and raised systolic blood pressure (SBP) (140-220 mmHg) to transdermal GTN patch or no GTN within 48 hours of onset. BPV was defined as the standard deviation (SD) of SBP. Patients were categorised by change in SBP variability (SBPV) from baseline to day 1: increase/no change; small decrease (reference group); moderate decrease; and large decrease (with the latter 3 groups as equal tertiles). The primary outcome was the modified Rankin Scale (mRS) at 90 days with secondary outcomes including early neurological deterioration, stroke recurrence and death at day 7. Analyses used unadjusted and adjusted models.

Results: In those randomised to GTN with a large decrease in SBPV, there was a favourable shift in mRS (odds ratio [OR] 0.76, 95% CI 0.58-1.0, $P=0.048$). Overall, a moderate decrease in SBPV was associated with less stroke recurrence (OR 0.37, 95% CI 0.14-0.94, $P=0.039$). In those with intracerebral haemorrhage and no change or an increase in SBPV there was an associated increased risk of death at day 7 (OR 17.01, 95% CI 1.48-195.82, $P=0.023$).

Conclusions: Early changes in BPV following acute stroke are associated with both early and late outcomes. Agents that reduce BPV may be of benefit in acute stroke and warrant further investigation.