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# Study: Giving Oxygen No Help After Stroke

## — Trial showed no effect on death, disability in non-hypoxic acute stroke

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September 26, 2017

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Acute stroke patients with sufficient oxygenation levels didn't benefit from provision of low-dose supplemental oxygen, whether continuous or at night only, the $SO_2S$ trial showed.

Three days of oxygen therapy -- given at 3 L/min for a baseline oxygen saturation of 93% or less and at 2 L/min over that -- had no impact on death and disability at 3 months as measured by modified Rankin Scale score with ordinal logistic regression (common OR 0.97 for a one level improvement, 95% CI 0.89-1.05) compared with oxygen given only when clinically indicated.

Those pooled results held also for the two oxygen arms individually, with no significant difference between continuous administration and nighttime use only (OR 1.03, 95%CI

0.93-1.13), reported Christine Roffe, MD, of Keele University in Stoke-on-Trent, England, and colleagues in the *Journal of the American Medical Association*.

"No subgroup could be identified that benefited from oxygen," they wrote, concluding that "These findings do not support low-dose oxygen in this setting."

The findings from the pragmatic clinical trial of 8,003 patients with acute stroke randomized to the three treatment groups within 24 hours of admission came on the heels of another large trial negative for supplemental oxygen in a different setting -- acute MI.

DETO2X-AMI, reported at the European Society of Cardiology (ESC) meeting and online in the *New England Journal of Medicine* in August 2017, showed no impact on 1-year all-cause mortality, rehospitalization for MI, extent of myocardial injury, or other outcomes from routine use of 6 L/min oxygen supplementation versus room air for 6 to 12 hours.

While supplemental oxygen has been routine in the U.S. in acute MI, cardiologists at ESC agreed with an editorialist regarding patients without hypoxemia: "It is clearly time for clinical practice to change to reflect this definitive evidence."

In stroke, though, Roffe's group suggested their results might still leave a chance at benefit for one group.

Whether very early administration of high-dose oxygen might help at-risk brain tissue or broaden the the time window for neuroprotection or thrombolysis remains to be seen definitively in the PROOF trial. An underpowered subgroup analysis in $SO_2S$ showed no difference in the 101 participants enrolled within 3 hours of symptom onset as in those enrolled later.

For other subgroups though, the researchers wrote: "Because of the large overall size of this trial, these patient subgroups were each sufficiently large for the lack of observed benefit to be likely real and not a false negative."

They noted that low-dose oxygen supplementation as used in their trial probably wasn't enough to prevent severe desaturation, which occurred similarly with oxygen and without. But randomized trials of high-flow oxygen treatment in acute stroke haven't suggested higher doses are any better for outcomes.

The low-dose oxygen tested in $SO_2S$ wasn't associated with more treatment-related adverse events or a difference in serious adverse events overall.

The project was funded by the NIHR Health Technology Assessment Programme and the Research for Patient Benefit Programme.

Roffe disclosed support from the Research for Patient Benefit Programme and the Health Technology Assessment Programme of the National Institute for Health Research and relevant relationships with Air Liqude and the PROOF trial.

**Primary Source**

*Journal of the American Medical Association*

Source Reference: *Roffe C, et al "Effect of routine low-dose oxygen supplementation on death and disability in adults with acute stroke, The Stroke Oxygen Study Randomized Clinical Trial" JAMA 2017;318:1125-1135; DOI:10.1001/jama.2017.11463.*