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Targeted oxygen therapy in the prehospital management of patients with chronic obstructive pulmonary disease

Although guidelines recommend targeted oxygen therapy for patients with hypoxia and exacerbations of chronic obstructive pulmonary disease (COPD), there is no strong evidence that this strategy is effective. In this study, Austin and colleagues perform the first randomised controlled trial, in the prehospital setting, of oxygen therapy titrated to target saturations in patients at risk of COPD.

Four hundred and five patients were recruited if upon paramedic assessment they fulfilled criteria for a presumptive diagnosis of COPD. The study suffered from a high level of deviation from the protocol, predominantly administration of high flow oxygen to patients in the titrated oxygen arm. Despite this limitation, intention to treat analysis demonstrated significantly reduced mortality (RR 0.42, 95% CI 0.2 to 0.89) in all patients in the titrated oxygen arm, including those later found to have no spirometric evidence of COPD and also in those with confirmed COPD (n=214) (RR 0.22, 95% CI 0.05 to 0.91). Those in the titrated oxygen arm with confirmed COPD were also less likely to develop acidosis or hypercapnia. Due to the high rate of deviation on per protocol analysis, power was lost and no mortality benefit was seen.

This study shows that even a relatively short period of high flow oxygen can affect survival in patients at risk of hypercapnic respiratory failure. It also highlights the difficulties in implementing new guidelines as even in the context of a clinical trial less than half the patients received titrated oxygen as per the trial protocol.

- **Austin MA**, Wills KE, Blizzard L, *et al.* Effect of high flow oxygen on mortality in chronic obstructive pulmonary disease patients in prehospital setting: randomised controlled trial. *BMJ* 2010;**341**:c5462.

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