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Automatic oxygen control during admission with exacerbation of COPD - a multicenter randomised controlled trial

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Introduction: Automatic oxygen control has been shown to be superior to manual control in patients with an acute exacerbation of COPD (AECOPD), but larger studies are missing.

Aim: To compare automatic oxygen control with manually controlled oxygen in patients admitted with AECOPD. We compared number of patients weaned from oxygen supplementation, time to discharge, time with optimal oxygen control, time with hypoxemia and time with hyperoxemia.

Methods: Patients were randomised during the first 48 hours of admission to receive either automatic oxygen control by O2matic or manually nurse-administered oxygen control for 3 days or until weaning from oxygen supplementation or discharge. Patients were recruited from 5 respiratory wards in the capital region of Denmark.

Results: From january 2019 until april 2022, 157 patients were randomised. There was no difference in median time from randomisation to discharge (5.9 versus 5.4 days, NS). Data on oxygen saturation (SpO2) and oxygen flow was missing in 30 subjects, and 127 patients were available for further analysis. Average intervention time was 40 hours in both groups. During the intervention 17 of 67 subjects were weaned from oxygen supplementation in the active group versus 9 of 60 in the control group (OR 1.9, CI: 0.8-4.7, NS). Patients in the active group spent significantly more time with normoxemia (81.4 vs. 55.6 %, $p<0.001$), and significantly less time with hypoxemia and hyperoxemia than the manually controlled patients.

Discussion: Automatic oxygen control in patients admitted with an exacerbation of COPD improves oxygen control, but we did not find faster weaning from oxygen supplementation or faster discharge.