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Title: Factors associated with the requirement of ventilatory support during an acute exacerbation of COPD

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Body: Background Invasive or non-invasive ventilatory support is often required for patients hospitalised with acute exacerbation of COPD (AECOPD). We aimed to identify some baseline characteristics associated with subsequent requirement for ventilatory support. Methods A retrospective study of consecutive patients admitted with AECOPD in an acute teaching hospital. Results 67 patients (45% male) with a mean (SD) age of 72 (12), % predicted FEV1 of 55 (20) and baseline ECOG performance status (PS) of 2 (1.2) were studied. 10 (15%) required invasive or non-invasive ventilatory support at some point during their admission.

Patient characteristics and admission parameters

	Ventilatory support (N=10)	No ventilatory support (N=57)	p value
Age	69 (11)	73 (13)	0.38
% predicted FEV1	67 (13)	54 (21)	0.17
Baseline PS	1 (1.25)	2.14 (1.14)	0.005
No. of admission in the preceding year	1.2 (1.7)	1.1 (1.4)	0.84
Admission serum glucose, mmol/L	8.1 (3.9)	6.8 (1.9)	0.06
Admission SpO2	88 (9)	94 (3)	0.006
Admission lactate, mmol/L	1.5 (0.8)	1.2 (0.5)	0.09
Admission respiratory rate	24 (10)	21 (5)	0.04
pH	7.39 (0.08)	7.42 (0.06)	0.21
PaCO2, kPa	6.85 (1.81)	5.51 (1.15)	0.004
PaO2, kPa	8.9 (2.6)	10.2 (3.8)	0.32

values presented as mean (SD)

Conclusions Patients with AECOPD who subsequently required ventilatory support had a significantly lower

SpO₂, higher PaCO₂ and a higher respiratory rate on admission. They also had a relatively better PS. Admission glucose and lactate levels were also important factors. Identifying high-risk patients based on these specific criteria on admission may help in managing patients with AECOPD more aggressively, thereby improving clinical outcomes.