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Title: Initiation of nocturnal ventilation using an intelligent autotitrating non-invasive ventilator: Impact on ventilatory efficiency, sleep and adherence

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Body: Intro: A novel intelligent non invasive ventilator allows automated set-up & delivery of volume assured ventilation within preset pressure support boundaries adjusting to patient requirements (iVAPS). iVAPS controls nocturnal hypoventilation (NH) comparably to standard non invasive pressure support ventilation (PS) in established NIV users. We hypothesise iVAPS is as effective as PS in naïve patients for controlling NH. Methods:18 patients with chronic obstructive or restrictive disorders & newly diagnosed NH, (mean(SD) age 51(17)yrs, mean day PaO_2 9.2(1.2)kPa, $PaCO_2$ 6.4(0.7)kPa) completed a randomised crossover study of iVAPS v PS (ResMed Ltd). Baseline FEV_1/FVC & respiratory muscle strength (RMS) were repeated at 1 month treatment, plus polysomnography. Results: iVAPS used less PS for the same ventilatory outcome; 7.7(2.9) v 10.2(2.9)cmH20(p=0.03*).

No differences were seen for FEV_1/FVC, RMS or sleep quality; arousal index 16.9(9.2) v 18.1(12.0)(p=0.65), O_2 desaturation index 7.2(6.6) v 6.4(6.9)(p=0.59). Adherence was superior with iVAPS; 5.6(2.1) v 4.6(2.3)hrs/day(p=0.002). Patients expressed an iVAPS preference. Conclusion:iVAPS is as effective as PS initiated by a skilled healthcare professional in controlling NH. It may facilitate NIV use without extensive prior team experience & may encourage compliance/adherence to therapy for patients newly adjusting to NIV.