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**Title:** Effect of heated humidification during initiation of home mechanical ventilation (HMV): A randomised cross-over trial

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**Body:** INTRODUCTION:Heated humidification(HH) use during HMV is controversial. We hypothesised HH would reduce comfort during HMV initiation due to increased dead space and reduced triggering performance.METHODS:Consecutive patients were enrolled.Patients received NIV with HH(MR810 Fisher Paykel NZ) or without(NH) for 3 weeks, then crossed over.Patients underwent overnight studies after each 3 week period with parasternal electromyogram(EMGpara), respiratory inductance plethysmography, mask pressure, transcutaneous oxygen(SpO<sub>2</sub>) and carbon dioxide(TcCO<sub>2</sub>) monitoring.Health related quality of life(HRQL) measures:Severe Respiratory Insufficiency(SRI) questionnaire and comfort with visual analogue scores(VAS).RESULTS:12 patients(5males) have been recruited to date(age 61±10years).Paired data are presented for 9.There was a difference in bicarbonate(mmol/l) between baseline and the end of each treatment period(baseline34±3, NH32±4 and HH31±4; p<0.05).There was no difference in EMGpara and TcCO<sub>2</sub> between the groups, however, there was a fall from baseline in the HH group.There was a significant difference between the IPAP and mask pressure during NH arm(p=0.03).There was no difference in overall HRQL and VAS between the groups, however some components in the SRI improved during HH.CONCLUSIONS:These data demonstrate HH does not adversely affect HMV and may enhance ventilation shown by the greater fall in TcCO<sub>2</sub>.