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Title: Management of eucapnic obese patients with sleep disordered breathing (SDB)

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Body: INTRODUCTION:An increasing number of patients referred for investigation of obesity related respiratory failure(ORRF) demonstrate daytime eucapnia but with many becoming hypercapnic overnight.We investigated the clinical management of these patients.METHODS:Prospectively entered data from electronic patient records(Carevue, Phillips, USA) between January–December 2012 were reviewed.Obese patients with suspected obesity related respiratory failure were included in the analysis.RESULTS:42 obese patients were assessed for ORRF. 28 (67%) patients had daytime eucapnia with confirmed obstructive sleep apnoea (OSA). Non-invasive ventilation(NIV) was given to 13(47%) patients; of these NIV was started as first line treatment in 9, whilst the remaining 4 were initiated on NIV due to failure of continuous positive airway pressure(CPAP).13(47%) were established on CPAP, of whom 8 were given CPAP immediately; the remainder started on CPAP after failing NIV.2(6%) were discharged without treatment as they could not tolerate CPAP or NIV.Compared to those initiated on CPAP, daytime eucapnic patients initiated on NIV had higher mean nocturnal $TcCO_2$ ($p<0.001$), greater time spent with $TcCO_2$>6kPa ($p=0.002$).

CONCLUSION:These data suggest that daytime eucapnic OSA patients who become hypercapnic overnight may benefit from NIV.Future studies will need to determine the level of nocturnal hypercapnia at which patients would benefit from NIV rather than CPAP.