

European Respiratory Society Annual Congress 2013

Abstract Number: 2513
Publication Number: P3579

Abstract Group: 4.2. Sleep and Control of Breathing

Keyword 1: Sleep disorders **Keyword 2:** Sleep studies **Keyword 3:** Treatments

Title: A systematic approach to selecting starting pressure results in better sleep outcomes from CPAP titration studies

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Body: Guidelines for CPAP titration studies recommend a low starting pressure (Pstart) and provide a titration algorithm to determine optimum therapeutic pressure (Popt). A low Pstart causes prolonged time at less than Popt resulting in lesser sleep time at therapeutic levels. We evaluated a systematic approach to selecting Pstart which enables more efficient CPAP titration. Methods: Pstart was empirically derived utilising markers of obesity and of OSA severity. 153 consecutive tests using the new-protocol Pstart were compared with 74 tests using the AASM recommended Pstart, with AASM titration algorithm (Kushida et al, J Clin Sleep Med 2008) used for all studies. Results: There were no between-group differences (standard versus new protocols) in age, gender distribution or OSA severity (AHI 47.4 vs. 39.6, $p=0.2$). Mean Popt was higher using the new protocol however time to achieve Popt was less and total sleep time (TST) at Popt was higher (table, mean (SD) shown). Successful treatment (AHI<10/hr) was better with the new protocol (90% v 76%, $p<0.001$).

Protocol	Pstart, cmH2O	Popt, cmH2O	Mins to Popt	TST Mins at Popt
Standard	5.2 (0.6)	8.7 (1.9)	215 (102)	140 (81)
New	8.3 (1.1)	9.5 (1.9)	103 (89)	225 (106)
p-value	<0.001	0.004	<0.001	<0.001

Discussion: Individual tailoring of Pstart for CPAP titration studies results in quicker attainment of Popt and longer sleep at this therapeutic level. This may result in a more favourable first-night CPAP experience with potentially more successful treatment outcomes.