

# European Respiratory Society Annual Congress 2012

**Abstract Number:** 822

**Publication Number:** P441

**Abstract Group:** 4.2. Sleep and Control of Breathing

**Keyword 1:** Sleep disorders **Keyword 2:** Longitudinal study **Keyword 3:** Apnoea / Hypopnea

**Title:** Predictors of long-term PAP-adherence in obstructive sleep apnea syndrome

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**Body:** Introduction: Few studies have assessed long-term adherence to positive airway pressure therapy (PAP) in OSAS. The aim of this retrospective study was to determine adherence and its potential predictors. Methods: All patients (pts) treated at the St.Gallen sleep centre from 11/2001 to 4/2011 were included for analysis of baseline data and follow-up information. The primary dependent variable of interest was continued use of PAP. Kaplan-Meier estimates and Cox-proportional hazards regression were used to model the risk of loss of adherence. A multivariate regression analysis was performed for age, gender, Epworth sleepiness score (ESS), BMI, apnea-hypopnea index (AHI) and oxygen desaturation index (ODI) at baseline. Results: During the study period, of 2160 pts started on PAP, 42(2%) died on PAP, 91(4%) no longer needed PAP (weight reduction, alternative treatments) and 311(14%) were lost to follow-up. In 1716 pts, adherence at 1y was 74(95% CI: 71-76)%, at 5y 56(53-59)%, and at 8y 52(49-56)%. Results of univariate and multivariate analyses are summarized in the figure.

Conclusion: Adherence is independently associated with clinical (ESS) and polysomnographic (ODI, AHI) measures of OSAS severity, but not with BMI, age, gender. Most pts who stopped PAP were lost to follow-up. With a relatively low long-term adherence, intensified efforts and alternative or novel follow-up options (e.g. telemetry) to support such patients should be tested.