Title: **Is autotitration as effective as in-laboratory titration for determining optimal CPAP pressure in children with OSA?**

Authors and Institutions: Lawrence Gersz[1]; Brenda Seaman MS, PNP[2]; Margaret-Ann Carno PhD, PNP[2,3,4]; Karen Chalanick MS, PNP[2]; Heidi V. Connolly MD[2,3].
[1]Strong Children's Research Center, University of Rochester Medical Center, Rochester NY
[2]Pediatric Sleep Medicine Services, Golisano Children's Hospital at Strong, Rochester, NY
[3]Department of Pediatrics, University of Rochester Medical Center, Rochester NY
[4]School of Nursing, University of Rochester, Rochester NY

Study Objectives: To compare auto-CPAP to in-laboratory CPAP titration for treatment of pediatric OSA.

Methods: Retrospective chart review of 219 children with polysomnographically diagnosed obstructive sleep apnea (ages 2-23) seen at the University of Rochester from 2011-2016 who required CPAP treatment for OSA. Children were acclimated to CPAP with autotitration prior to in-laboratory titration. 95th%ile pressure from autotitrator use was defined as ideal. The ideal in-laboratory pressure was determined by sequential titration of CPAP pressures per the AASM guidelines. Studies were scored using American Academy of Sleep Medicine Manual for Scoring Sleep guidelines.

Results: 72 children aged 12.5±4.5 years were identified who had both autotitration and in-laboratory titrations. A significant, but weak correlation between the pressure values was found (auto 9.6±2.3 cm H2O vs lab 9.0±2.6; r=0.444; p<0.000). In the 45 anatomically normal children, a significant, stronger correlation was identified (auto 9.5±2.3 cm H20 vs lab 9.1±2.3; r=0.561; p<0.000). The residual AHI was higher with autotitration (auto 3.2±2.6 cm H2O vs lab 2.3±3.0; p=0.032). In the 27 children with craniofacial differences (Down Syndrome, Treacher Collins, Pierre Robin Sequence, Cleft lip/palate), there was no significant correlation (auto 9.7±2.3 cm H20 vs lab 8.8±2.4; r=0.153; p=0.45).

Conclusion: In children with normal craniofacial anatomy, autotitrating CPAP accurately reflects in-lab titration pressures. However, autotitration derived pressures are less effective at reducing AHI compared to in-lab titration. In children with craniofacial differences, autotitration does not indicate appropriate titration pressures. Thus, in-laboratory CPAP titration remains the standard for CPAP initiation.