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Poster Board #F64] Treatment of Sleep-Disordered Breathing in Chronic Obstructive Pulmonary Disease with Nocturnal Nasal Insufflation, [Publication Page: A709]

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**Introduction:** Sleep-disordered breathing (SDB) with inspiratory flow limitation (IFL) is common in patients with COPD, even without frank apneas or hypopneas. Nocturnal nasal insufflation (NNI) may relieve IFL and upper airway obstruction during sleep to improve gas exchange and sleep quality in COPD.

**Methods:** Non-hypoxemic individuals with a wide range of COPD severity underwent baseline polysomnography to determine the severity of sleep-disordered breathing. On a separate night, subjects were exposed to alternating trials of NNI (20 L/min), oxygen (2 L/min), and room air during NREM sleep. SDB indices including arousal-terminated IFL event rates, the apnea-hypopnea index (AHI) and transcutaneous carbon dioxide (TcCO<sub>2</sub>) were compared among conditions.

**Results:** NNI decreased the arousal frequency, AHI, and TcCO<sub>2</sub> from the room air and oxygen conditions. NNI resulted in a 50% reduction in IFL events compared to room air (p=0.04) whereas oxygen was associated with a 120% increase in IFL events. TcCO<sub>2</sub> increased during oxygen treatment and fell during NNI compared to the room air condition (**Figure 1**, p=0.001 for NNI vs. room air).

**Conclusion:** NNI decreased SDB and improved nocturnal ventilation in patients with COPD. The CO<sub>2</sub> response to NNI suggests that IFL contributes to the development of nocturnal hypoventilation in COPD and that NNI may constitute a novel treatment for SDB in COPD.

