



# Rethinking complex sleep apnea

What has previously been called complex sleep apnea (CompSA), and more recently known as treatment-emergent central sleep apnea (CSA), is being increasingly recognized as having the potential to decrease therapy compliance, increasing the risk of therapy termination for patients on continuous positive airway pressure (CPAP) therapy while presenting itself as a unique condition with its own challenges.

As clinical outcomes are dependent on adequate device usage, efforts to understand CSA and why compliance rates are falling are essential to developing effective treatment plans for those patients affected.

Two recently published retrospective studies<sup>1,2</sup> investigated the development of CSA in obstructive sleep apnea (OSA) patients on CPAP and how it affects therapy outcomes and compliance.

This resource summarizes the publication findings and recommendations on how to potentially improve compliance and reduce therapy termination risk by monitoring CSA in CPAP patients during the early months of therapy and transitioning to ASV when appropriate.

## Abbreviations

**AHI:** apnea-hypopnea index

**ASV:** adaptive servo-ventilation

**CAI:** central apnea index

**CPAP:** continuous positive airway pressure

**CSA:** central sleep apnea

**HR:** hazard ratio

**OSA:** obstructive sleep apnea

**SDB:** sleep-disordered breathing



## Trajectories of CSA during CPAP therapy and association with therapy termination<sup>1</sup>

This study assessed the telemonitoring data of a random sample of 133,006 SDB patients treated with CPAP in the initial 90 days on therapy to determine the development and characteristics of CSA in those who had developed it.

- The overall prevalence of CSA in CPAP patients was 3.5%. Of those patients, 19.2% had emergent CSA, 25.2% had persistent CSA and 55.1% had transient CSA.
- Patients who developed CSA were generally older, had higher residual AHI and CAI, and were less likely to achieve an average AHI <15 per hour or CAI <5 per hour in the first 90 days.
- Patients on CPAP with any form of CSA had the highest risk of therapy termination compared to those without CSA (HR = 1.7 for emergent CSA, HR = 1.4 for persistent CSA and HR = 1.3 for transient CSA)

### Key takeaway

CSA can manifest in CPAP patients as three different types, namely emergent, transient and persistent, each with its unique characteristics. With termination of therapy likely in those who develop CSA, regular patient monitoring is an important step in helping identify such patients and to provide early intervention.

## Compliance after switching from CPAP to ASV<sup>2</sup>

This second study evaluated telemonitoring data from 198,890 sleep apnea patients to compare Medicare compliance rates between various groups, namely patients who had switched from CPAP to ASV, patients on CPAP-only and patients on ASV-only.

- Patients who were treated with CPAP-only had a compliance rate of 73.8%. Patients who were treated with ASV-only had a compliance rate at 73.2%
- Patients on CPAP, prior to switching, had the lowest therapy compliance rate among the three groups at 62.7%.
- Following therapy change in these patients to ASV compliance rates increased to 76.6%. A 22% relative increase in Medicare compliance rate.
- After switching from CPAP to ASV, the AHI of these patients fell from 17.2 per hour to 4.4 per hour.

### Key takeaway

Patients with treatment emergent CSA who switched from CPAP to ASV had significantly improved compliance and reduction in AHI. This suggests that ASV may be a more effective and suitable choice for these patients.

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1. D Liu et al. Trajectories of CSA during continuous positive airway pressure therapy and association with therapy termination. American Thoracic Society Conference (abstract) 2017: A11975.  
2. JL Pépin et al. Compliance after switching from CPAP to ASV. Sleep and Breathing Conference (abstract) 2017: P45.