

1. Liu et al., Chest 2017
Trajectories of Emergent Central Sleep Apnea During CPAP Therapy
(Identify trajectories & clinical phenotypes of treatment-emergent CSA-big data)

n = 133,006 patients that used CPAP therapy (based on telemonitoring data from AirView over 13 weeks of usage)

CSA phenotypes observed in 3.5% of patients:

- ◆ **Transient CSA** (CAI \geq 5/h in week 1, < 5/h week 13; **55.1% of CSA pts**)
- ◆ **Persistent CSA** (CAI \geq 5/h in week 1, \geq 5/h week 13; **25.2% of CSA pts**)
- ◆ **Emergent CSA** (CAI < 5/h in week 1, \geq 5/h week 13; **19.7% of CSA pts**)

RMD AirSense 10 devices (CPAP, APAP)

Takeaways

- **CSA can manifest as transient, persistent or emergent**
- **Untreated CSA on CPAP leads to an increased risk of terminating therapy**
- **ASV is designed to treat CSA**

2. O'Connor et al., J AM Coll Cardiol 2017 (CAT-HF Trial)
Cardiovascular Outcomes with Minute Ventilation (MV)-Targeted ASV Therapy in Heart Failure (HF)
(MV ASV therapy in select HF patients)

n = 126 HF patients (included both HFrEF and HFpEF) and sleep apnea (CSA, OSA, or both) were randomized to **ASV + optimized medical therapy (OMT)** or **OMT alone** - followed for 6 months.

- ◆ No significant differences in cardiovascular outcomes
- ◆ Sleep apnea severity: larger AHI* \downarrow in ASV group (35.7 to 2.1 vs. 35.1 to 19.0 among control group)

(ASV+OMT) patients classified into 2 subgroups:

- ◆ HFrEF (reduced LVEH \leq 45%) and HFpEF (preserved LVEH >45%)
- ◆ Favorable cardiovascular outcomes* in HFpEF (p = 0.036)

RMD VPAP Adapt

Takeaway

- **MV ASV therapy may have a positive effect in HF patients with preserved ejection fractions (HFpEF)**

3. Morgenthaler et al., Sleep 2014
ASV vs. CPAP therapy for patients with complex sleep apnea syndrome (CompSAS)
(Efficacy of ASV vs. CPAP over 3 months of therapy)

n = 66 patients followed for 3 months

- ◆ Baseline Avg. AHI: 37.0 and Avg. CAI: 29.7
- ◆ Avg. AHI: 4.4* in the ASV group vs 9.9 in the CPAP group
- ◆ Avg. CAI 0.7* in the ASV group vs 4.8 in the CPAP group

AHI <10 at 3-month: 90% patients (ASV) vs. 65% (CPAP)
 ASV group had 2X the rate of normalization of AHI

RMD VPAP Adapt SV™ in ASV or CPAP mode

Takeaway

- **ASV therapy may offer significantly better reduction of AHI than CPAP among complex CSA patients**

4. Javaheri et al., J Clin Sleep Med 2014
ASV for Treatment of Opioid-Associated Central Sleep Apnea (CSA)
(Efficacy of ASV therapy after failed CPAP therapy on opioid induced CSA)

n = 20 patients primarily treated on CPAP and then switched to ASV- followed by up to 6 years

- ◆ \downarrow * CAI: from 32/h to zero
- ◆ \downarrow * AHI: from 61/h to 11/h
- ◆ \uparrow * Minimum SpO2: from 83% to 90%
- ◆ Good long-term adherence on ASV, avg. 5.1 hours/night

RMD VPAP Adapt SV™ Enhanced

Takeaways

- **ASV therapy provided significantly better AHI reduction and improvements in oxygen levels compared to CPAP**
- **Long term adherence shows patients' acceptance of ASV therapy**

ASV Clinical Studies

(1) Clinical Phenotypes

- Liu

(2) Compliance

- Liu
- Javaheri

(3) Efficacy

- Morgenthaler
- Javaheri

(4) Outcomes

- O'Connor