CARDIOVASCULAR DISEASE AND SLEEP APNEA: WHAT IS THE CURRENT EVIDENCE?

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Cardiovascular Disease and Sleep Apnea: What's the Current Evidence?

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A whirlwind tour…

Sleep Apnea and….

- Atrial fibrillation
- HFpEF/HFrEF
- Cerebrovascular disease
- Cardiovascular disease
- Pulmonary hypertension

Baseline…

Sleep apnea is associated with multiple cardiovascular diseases.

Treatment with CPAP:

- Modestly reduces blood pressure
- Modestly improves LVEF in HFrEF patients
- Improves cardiovascular morbidity and mortality in moderate to severe OSA, particularly those who are excessively sleepy
- Reduces the odds of AF recurrence following cardioversion
- Improves functional outcomes following stroke

Data is inconclusive for mild SDB and cardiovascular risk and risk reduction with treatment

Atrial Fibrillation and Sleep Apnea

- Prospective observational study
- N=123
- 2 nights ambulatory PSG

TABLE 1 Demographic characteristics of the study population

	Total, N = 123	Males, n = 85	Females, n = 38	Difference, *P* Value
Age, y	63.6 ± 13.3	62 ± 13	66 ± 13	0.1
Sex (%)	69 M, 31 F	69	31	0.000[a]
BMI, kg/m^2	28.7 ± 5.8	29 ± 5.4	28 ± 6.7	0.4
≥30 kg/m^2	34	31	41	0.3
>35 kg/m^2	12	12	12.5	0.9
Neck circumference, cm	39.7 ± 3.7	40.96 ± 3.2	36.37 ± 3	0.000[a]
>42 cm in males or > 41 cm in females	20	28	3	0.005[a]

Abbreviations: BMI, body mass index; F, female; M, male; SD, standard deviation. Data are presented as % of total or mean ± SD. The independent sample *t* test was used to compare means of continuous variables, and the χ^2 test was used to compare proportions of categorical variables.

Clin Cardiol. 2018;41:594–600.

Atrial Fibrillation and Sleep Apnea

- OSA diagnosed in 85%
- 27% of "normals" had REM-related OSA
- Age and male gender = predictors of OSA

TABLE 4 Prevalence of OSA among patients with arrhythmia including age and sex comparisons

	Prevalence of OSA (AHI ≥5/h)			
	Total	Males	Females	*P* Value
All age groups	85 (N = 100)	91 (n = 70)	70 (n = 30)	0.006[a]
Age, y				
≥60	92 (n = 71)	94 (n = 48)	87 (n = 23)	0.3
<60	69 (n = 29)	86 (n = 22)	14 (n = 7)	0.000[a]
40–59	71 (n = 21)	88 (n = 16)	20 (n = 5)	0.004[a]
≥40	87 (n = 92)	92 (n = 64)	75 (n = 28)	0.02[a]
<40	63 (n = 8)	83 (n = 6)	0 (n = 2)	0.03[a]

Abbreviations: AHI, apnea-hypopnea index; OSA, obstructive sleep apnea. Data are presented as % of total. The χ^2 test was used to compare proportions of categorical variables.

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Impact of CPAP on AFib

- Single-center randomized parallel study
- N=25
- Eligibility
  - DCCV within 30d with sinus on post-ECG
- Intervention
  - Split night PSG with CPAP for OSA and ASV for CSA/Complex apnea
  - q3mo follow up for a year or until AF recurred (ESS, FOSQ, PAP data and ECG)

Table 1
Exclusion criteria.

	Exclusion criteria
1	Moderate to severe pulmonary disease (e.g. asthma, chronic obstructive pulmonary disease, pulmonary fibrosis)
2	Moderate to severe cardiac valvular disease
3	Congestive heart failure (LVEF <40%)
4	Previous diagnosis of sleep apnea or PAP treatment
5	Neuromuscular disease or residual neurologic impairment following stroke
6	Previous pulmonary vein ablation procedure
7	Pacemaker in situ
8	Uncontrolled hypertension (despite use of ≥3 antihypertensive medications)
9	Sleepiness, defined as an ESS score >10

Abbreviations: ESS, Epworth Sleepiness Scale; LVEF, left ventricular ejection fraction; PAP, positive airway pressure.

Int J Cardiol. 2018 Nov 20. pii: S0167-5273(18)36067-4

Table 2
Baseline patient characteristics.

Characteristic	Control ($N = 13$) Mean (SD)	PAP ($N = 12$) Mean (SD)	p value
Age, in years	64.6 (10.1)	63.5 (7.9)	0.76
Male gender no. (%)	7 (54)	7 (58)	–
BMI, kg/m^2	35.8 (7.0)	36.0 (8.4)	0.95
LVEF, %	57.3 (7.1)	58.1 (7.5)	0.78
LAVI, ml/m^2	35.6 (6.5)	40.6 (6.8)	0.10
AHI, events per hour	29.8 (21)	30.3 (19.5)	0.95
AHI range, events per hour	13.1–71.7	10.0–60.8	–
Obstructive apnea index, events per hour	13.8 (16.0)	13.7 (16.1)	0.98
Central apnea index, events per hour	0.6 (2.3)	0.8 (2.3)	0.83
Minimum SpO_2, %	80.1 (8.2)	80.2 (8.1)	0.97
Time with SpO_2 >90%, %	90.2 (14.1)	90.1 (14.2)	0.98
Baseline ESS score	7.3 (3.3)	4.8 (2.1)	0.04
Baseline FOSQ score	17.6 (1.6)	19.1 (0.7)	0.01

Abbreviations: AHI, apnea-hypopnea index; BP, blood pressure; BMI, body mass index; ESS, Epworth sleepiness scale; FOSQ, functional outcome of sleep questionnaire; LAVI, left atrial volume index; LVEF, left ventricular ejection fraction; PAP, positive airway

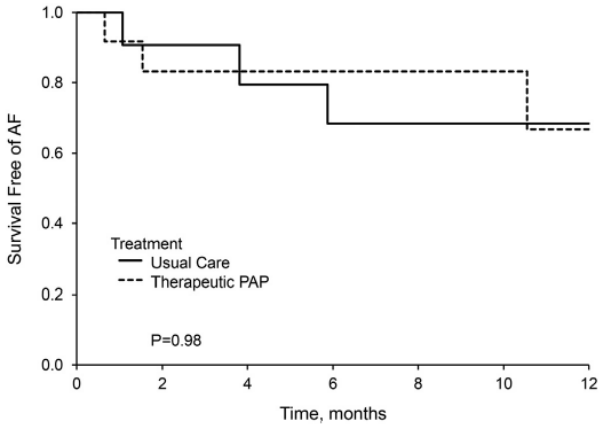

Fig. 1. Survival free of AF after direct current cardioversion in subjects on PAP versus those receiving usual care. Abbreviations: AF, atrial fibrillation; PAP, positive airway pressure.

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Post-Op AF in OSA

- Aim: to evaluate if OSA risk is associated with post-cardiac surgery AF, reintubation, or ICU LOS
- Retrospective observational study of CABG pts
- N=1593
- Overall incidence of 37% AF

Table 3. Association Between STOP-BANG Scores and Postoperative Outcomes

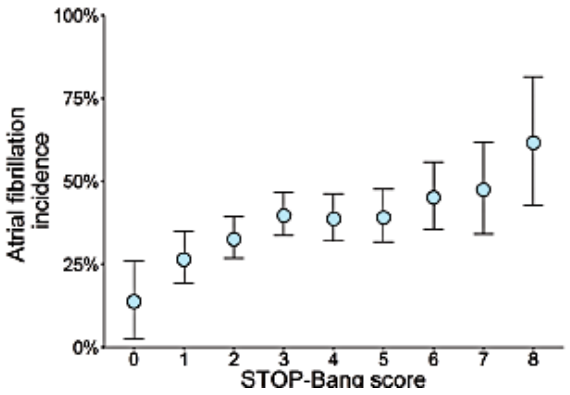
	Incidence (N = 1593)		
Primary Outcome		**Odds Ratio[a] (CI)[b]**	***P* Value[b]**
Atrial fibrillation	591 (37%)	1.16 (95% CI, 1.09–1.23)	<.001
Secondary Outcomes			
Need for tracheal reintubation[c]	18 (1%)	NA	NA
Initial intensive care unit length of stay (h)[d]	29 [24, 53]	**Hazard Ratio[a]** 0.99 (97.5% CI, 0.96–1.03)[b]	.99[b]
Duration of initial intubation (h)[f]	11 [8, 15]	**Ratio of Geometric Means[a]** 1.01 (97.5% CI, 1.00–1.04)[b]	.03[b]

Anesth Analg 2018;126:2025–31

An increased STOP-BANG score was associated with higher odds of postoperative atrial fibrillation (odds ratio [95% confidence interval {CI}], 1.16 [1.09–1.23] per-point increase in the STOPBANG score; *P* < .001).

able 1. STOP-BANG Questionnaire

. Snoring: Do you snore loudly enough to be heard through closed doors?	Yes	No
. Tired: Do you often feel tired, sleepy, or fatigued during the daytime?	Yes	No
. Observed: Has anyone observed you stop breathing in your sleep?	Yes	No
. Blood pressure: Are you being treated for high blood pressure?	Yes	No
. BMI: Is your BMI >35 kg/m²?	Yes	No
. Age: Age over 50 y old?	Yes	No
. Neck circumference: Neck circumference >40 cm?	Yes	No
. Gender: Male?	Yes	No



Anesth Analg 2018;126:2025–31

Heart Failure, Arrhythmias, SA & ASV

- Recruited from CAT-HF trial: prospective sub-study
  - CAT-HF: HFrEF, HFpEF with AHI>15/h; ASV +OMT vs. OMT alone
  - Eligible device types included permanent pacemakers, implantable cardioverter-defibrillators (ICDs), and cardiac resynchronization therapy-defibrillator [CRT-D] devices
- Aim: to determine whether ASV with optimal medical therapy (OMT) reduces AF and/or VT/VF burden compared to OMT alone.
- N= 35
- Co-primary endpoints: AF burden and Occurrence of ventricular arrhythmia

Heart Rhythm 2019;16:91-97

- AF burden reduced
- No increased VT/VF events

Table 3 Change in arrhythmia burden from baseline to follow-up*

	ASV + OMT	OMT	*P* value
Change in AT/AF burden from baseline to follow-up			
n	19	16	
Baseline (%)	29.8 ± 48	5.6 ± 11.6	.034
Follow-up (%)	13.6 ± 34.2	8.4 ± 28.9	
Change from baseline (%)†	−15.8 ± 36.5	23.7 ± 36.2	
Change in occurrence of VT/VF events from baseline to follow-up			
n	28	18	
Baseline (events)	4.6 ± 11.5	3.0 ± 9.14	.58
Follow-up (events)	5.4 ± 15.8	3.0 ± 10.2	
Change from baseline (events)†	+3.3 ± 14.9	−0.3 ± 7.3	

Values are given as n or mean ± SD unless otherwise indicated.
AT = atrial tachycardia; other abbreviations as in Tables 1 and 2.
**P* values are from the mixed model analysis, which used all observations and accounted for within-subject correlations.
†Change from baseline as determined by the mean of differences.

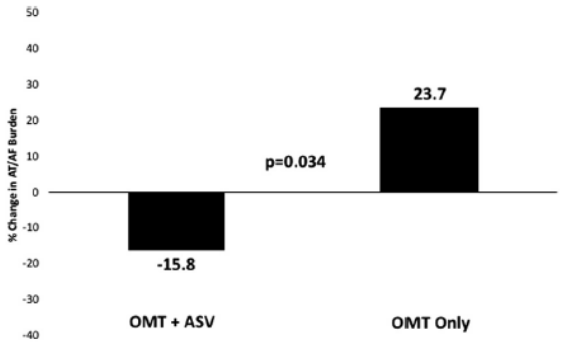


Figure 1 Change in AT/AF burden in follow-up according to treatment. AF = atrial fibrillation; ASV = adaptive servo-ventilation; AT = atrial tachycardia; OMT = optimal medical therapy.

Heart Rhythm 2019;16:91-97

MI and Sleep Apnea

- Single center prospective observational study
- The aim of this study was to investigate whether EDS would be an independent prognostic factor after myocardial infarction
- N=112
- Inclusion: MI
- Exclusion: known SDB and treatment with PAP, sedatives
- Polysomnography within 7d of MI, ESS
- The primary composite end point was major adverse cardiac events (MACE), including death (either cardiovascular or all-cause mortality), readmission for recurrent nonfatal MI, hospitalized unstable angina regardless of revascularization, hospitalized heart failure, stroke, and significant arrhythmic events

Am Heart Assoc. 2018;7:e007221

MI and Sleep Apnea

Table 2. Frequency of MACE and MACE Components

	Overall Population (N=104)		Patients With EDS (n=31)		Patients Without EDS (n=73)	
	Patients, n (%)	Events, n	Patients, n (%)	Events, n	Patients, n (%)	Events, n
MACE	35 (33.7)	60	15 (48.4)	29	20 (27.4)	31
Death	10 (9.6)	10	4 (12.9)	4	6 (8.2)	6
Hospitalization						
Reinfarction	13 (12.5)	15	9 (29.0)	11	4 (5.5)	4
Angina	9 (8.7)	14	2 (6.5)	4	7 (9.6)	10
Heart failure	9 (8.7)	9	2 (6.5)	2	7 (9.6)	7
Significant arrhythmias	6 (5.8)	9	4 (12.9)	7	2 (2.7)	2
Stroke	3 (2.9)	3	1 (3.2)	1	2 (2.7)	2

EDS indicates excessive daytime sleepiness; MACE, major adverse cardiac events.

Am Heart Assoc. 2018;7:e007221

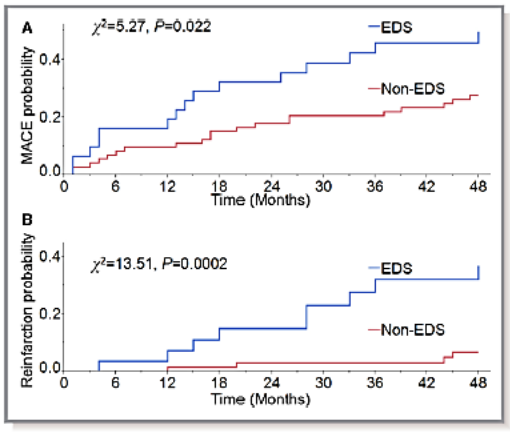


Figure 1. Kaplan–Meier curves show post–myocardial infarction patients with EDS had higher rates of MACE (A) and reinfarction (B) than those without EDS. EDS indicates excessive daytime sleepiness; MACE, major adverse cardiac events.

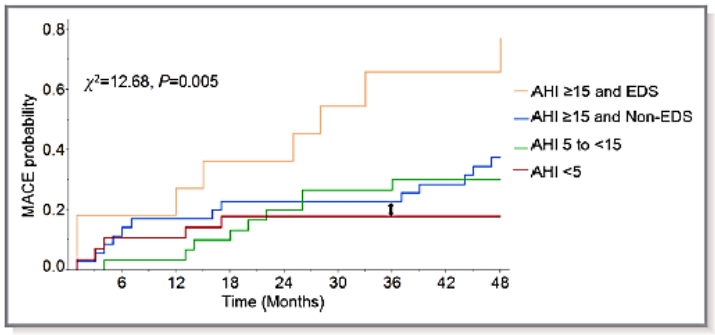


Figure 2. MACE estimates for post–myocardial infarction patients with and without SDB and EDS. Patients with both EDS and moderate to severe SDB (AHI ≥15) had the highest risk of MACE. Note that in those patients with moderate to severe SDB (AHI ≥15) and without EDS (blue line), the probability of MACE at 36 months (indicated by arrow) is very similar to the 36-month outcome in those without SDB (AHI <5; red line). AHI indicates apnea–hypopnea index; EDS, excessive daytime sleepiness; MACE, major adverse cardiac events; SDB, sleep-disordered breathing.

Am Heart Assoc. 2018;7:e007221

- Patients with EDS had more than twice the risk of MACE 4yrs after MI than those without EDS
  - Prognostic value persisted after adjusting for age, DM, LVEF, AHI, Sat, Depression
- Mod-Sev SDB + EDS was associated with a higher risk of MACE, even after adjusting for min sat and age

Table 3. Cox Proportional Hazards Analysis of EDS (ESS ≥11) for MACE in Post-MI Patients

	HR (95% CI)	*P* Value
All post-MI patients (n=104)		
Unadjusted	2.15 (1.08–4.18)	0.030
Adjusted for age	2.15 (1.08–4.19)	0.029
Adjusted for age, diabetes mellitus, and LVEF	2.15 (1.08–4.22)	0.031
Adjusted for age, diabetes mellitus, LVEF, depression, AHI, and min$Sa0_2$	2.13 (1.04–4.26)	0.039
Subgroup patients with moderate to severe SDB (n=46)		
Unadjusted	2.80 (1.10–6.75)	0.032
Adjusted for age and min$Sa0_2$	3.17 (1.22–7.76)	0.019

Am Heart Assoc. 2018;7:e007221

CPAP and MACE

Table 1 Study design and clinical characteristics of included studies

Source	Study design, location, years	Number of participants	Main inclusion criteria	Mean age (Years)	Male (%)	Mean BMI (kg/m^2)	Mean AHI (events/h)	Mean ESS (points)	OSA assessment
Milleron et al., 2004 [7]	Prospective cohort, single-center in France, 1991–1999	54	AHI ≥ 15	57.3	98.1	28.3	31.2	NR	Polysomnography
Cassar et al., 2007 [8]	Retrospective cohort, single-center in US, 1992–2004	371	AHI ≥ 15	64.0	87.6	34.1	44.2	NR	Polysomnography
García-Río et al., 2013 [9]	Prospective cohort, single-center in Spain, 2003–2005	123	AHI ≥ 5	58.0	86.2	27.3	21.7	8.5	Polysomnography
Capodanno et al., 2014 [10]	Prospective cohort, single-center in Italy, 2008	129	AHI ≥ 15	68.3	80.6	27.3	22.4	7	Portable diagnostic device
Nakashima et al., 2015 [11]	Prospective cohort, single-center in Japan, 2003–2009	95	AHI ≥ 20	71.0[a]	77.0[a]	NR	NR	NR	Polysomnography
Wu et al., 2015 [12]	Retrospective cohort, single-center in China, 2002–2012	295	AHI ≥ 15	55.1	84.4	29.7	42.8	NR	Polysomnography 72.1%, Portable diagnostic device 27.9%
Leão et al., 2016 [13]	Prospective cohort, single-center in Portugal, NR	46	AHI ≥ 5	63.5	82.6	27.8	30.6	8.8	Portable diagnostic device
Huang et al., 2015 [14]	RCT, parallel, single-center in China, 2009–2012	73	AHI ≥ 15, ESS < 15	62.4	82.2	27.7	28.5	8.8	Polysomnography
Peker et al., 2016 [15]	RCT, parallel, single-center in Sweden, 2005–2010	244	AHI ≥ 15, ESS < 10	66.0	84.1	28.5	28.8	5.5	Polysomnography

AHI apnea-hypopnea index, *BMI* body mass index, *ESS* Epworth Sleepiness Scale, *NR* not reported, *OSA* obstructive sleep apnea, *RCT* randomized controlled trial
[a]Indicate values in patients with AHI ≥ 15

Respiratory Research (2018) 19:61

- Treatment with CPAP was associated with a significantly lower risk of MACE in 6 observational studies (RR 0.61, 95% CI: 0.39–0.94, P = 0.02). However, this result was not confirmed in 2 RCTs (RR 0.57, 95% CI: 0.32–1.02, P = 0.06)

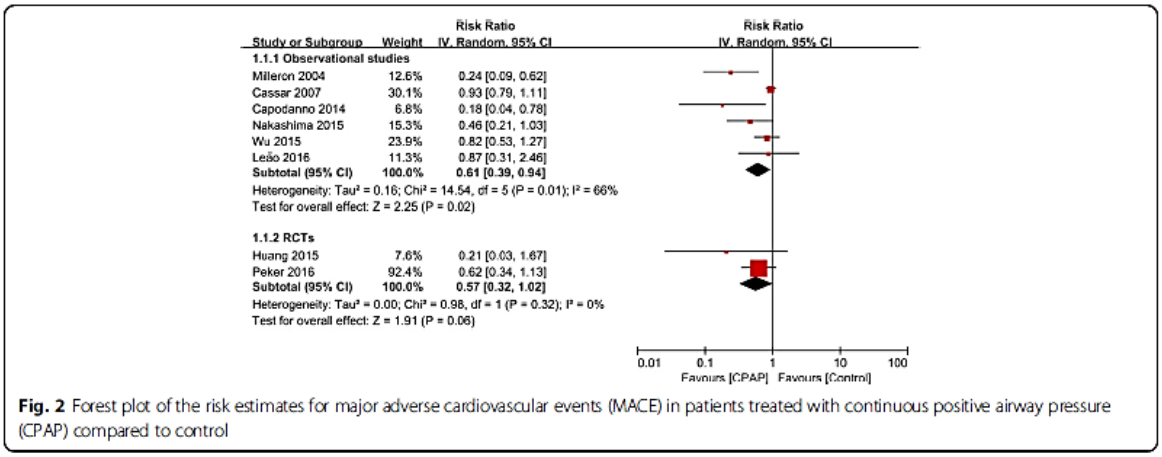


Fig. 2 Forest plot of the risk estimates for major adverse cardiovascular events (MACE) in patients treated with continuous positive airway pressure (CPAP) compared to control

Respiratory Research (2018) 19:61

- CPAP therapy significantly reduced the risk of cardiovascular death in 3 observational studies (RR 0.28, 95% CI 0.12–0.68, I2 = 0%)
- CPAP therapy tended to be associated with a reduced risk of MACE in the 2 RCTs (RR 0.57, 95% CI: 0.32–1.02), although there was no statistically significant difference

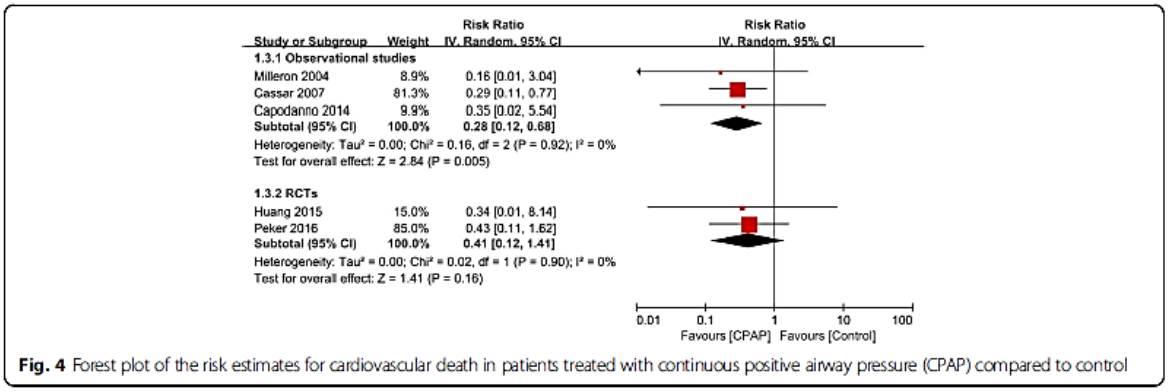


Fig. 4 Forest plot of the risk estimates for cardiovascular death in patients treated with continuous positive airway pressure (CPAP) compared to control

Respiratory Research (2018) 19:61

CVA, OSA, CPAP

- Objective: to assess the effect of CPAP treatment on prevention of new vascular events among patients with stroke and OSA
- 116 first-stroke patients screened and underwent PSG.
  - 83 (72%) with AHI >15
  - 70 randomized (ran out of PAP)
- Follow up 3, 6, 12mo
- Primary outcome new vascular event
- Secondary outcomes: Barthel Index, modified Rankin scale, other neuropsychological parameters

J Clin Sleep Med. 2018;14(4):511–521.

Table 4—Incidence of new vascular events in patients randomized to CPAP and non-CPAP groups at 12-month follow-up.

	CPAP (n = 30)	Non-CPAP (n = 40)	*P*
Total vascular events, cardio-cerebrovascular	1 (3.3)	6 (15.0)	.23
Stroke	0 (0.0)	0 (0.0)	–
TIA	1 (3.3)	2 (5.0)	NS
Angina	0 (0.0)	2 (5.0)	.50
Myocardial Infarction	0 (0.0)	0 (0.0)	–
Nonsymptomatic change in ECG	0 (0.0)	1 (2.5)	NS
Death *	0 (0.0)	1 (2.5)	NS
Other events #	1 (3.3)	2 (5.0)	

Values are presented as n (%). Symbols are defined as follows: * = death occurred due to sudden cardiac arrest in hospital emergency, possibly due to an acute coronary event, # = one had seizure, one had upper respiratory tract infection with exacerbation of congestive cardiac failure (non-CPAP group), one had road traffic accident, as a passenger (CPAP group); none of the events occurred in the same patient. CPAP = continuous positive airway pressure, ECG = electrocardiogram, TIA = transient ischemic attack.

J Clin Sleep Med. 2018;14(4):511–521.

Table 5—Secondary outcomes in the CPAP versus non-CPAP groups at follow-up.

		CPAP (n = 30)	Non-CPAP (n = 40)	*P*
Epworth Sleepiness Scale Score				
Baseline	Mean ± SD	7.14 ± 7.33	5.25 ± 4.70	.66
	Median (range)	7 (0–22)	6 (0–15)	
3 Months	Mean ± SD	5.14 ± 1.41	5.38 ± 4.92	.79
	Median (range)	6 (0–14)	6 (0–16)	
6 Months	Mean ± SD	3.12 ± 1.12	5.38 ± 4.92	.02
	Median (range)	2 (0–5)	6 (0–16)	
12 Months	Mean ± SD	3.00 ± 1.23	6.12 ± 4.38	< .001
	Median (range)	2 (0–6)	8 (0–16)	
Aphasia Battery Score				
Baseline	Mean ± SD	51.5 ± 54.03	62.21 ± 82.53	.45
	Median (range)	40.05 (2–270)	28.5 (3–270)	
6 Months	Mean ± SD	43.78 ± 40.74	42.61 ± 28.67	.88
	Median (range)	16 (15–122.5)	20 (7–57)	
12 Months	Mean ± SD	36.5 ± 25.77	39.92 ± 27.25	.59
	Median (range)	19 (2–42)	17.5 (2–65)	
Memory Scale Score				
Baseline	Mean ± SD	50.20 ± 23.66	51.14 ± 27.5	.75
	Median (range)	54.5 (0–80.5)	56 (0–90)	
6 Months	Mean ± SD	59.07 ± 11.90	68.55 ± 15.90	.21
	Median (range)	61 (43–77)	67 (48.5–95)	
12 Months	Mean ± SD	67.91 ± 11.71	68.00 ± 17.08	.99
	Median (range)	65 (57–86)	69 (50–95)	

J Clin Sleep Med. 2018;14(4):511–521.

Mini Mental State Examination				
Baseline	Mean ± SD	23.13 ± 7.66	22.42 ± 8.62	.81
	Median (range)	25.5 (0–30)	25 (0–30)	
6 Months	Mean ± SD	26.00 ± 3.87	26.33 ± 3.84	.86
	Median (range)	28 (19–29)	28 (20–30)	
12 Months	Mean ± SD	28.66 ± 1.51	26.83 ± 2.48	.15
	Median (range)	29 (26–30)	27.5 (23–30)	
Barthel Index				
Baseline	Mean ± SD	83.61 ± 29.24	84.44 ± 24.54	.92
	Median (range)	100 (40–100)	100 (35–100)	
3 Months	Mean ± SD	95.08 ± 23.83	94.22 ± 20.79	.87
	Median (range)	100 (50–100)	100 (55–100)	
6 Months	Mean ± SD	95.30 ± 15.40	95.32 ± 20.88	.99
	Median (range)	100 (65–100)	100 (55–100)	
12 Months	Mean ± SD	95.32 ± 16.91	96.55 ± 19.97	.96
	Median (range)	100 (65–100)	100 (55–100)	
Blood Pressure				
Baseline	SBP, mean ± SD	126.54 ± 11.32	125.78 ± 3.26	NS
	DBP, mean ± SD	87.63 ± 5.83	85.43 ± 8.90	
6 Months	SBP, mean ± SD	128.44 ± 10.10	127.24 ± 6.76	NS
	DBP, mean ± SD	84.41 ± 6.02	84.23 ± 7.03	
12 Months	SBP, mean ± SD	128.13 ± 12.01	125.63 ± 3.87	NS
	DBP, mean ± SD	86.23 ± 5.54	84.12 ± 8.09	
Patients With mRS Score Change > 1 From Baseline				
3 Months	n (%)	10 (33.33)	9 (22.5)	.41
6 Months	n (%)	15 (50)	9 (22.5)	.02
12 Months	n (%)	16 (53.33)	11 (27.5)	.03

mRS = Modified Rankin Scale , ESS = Epworth Sleepiness Scale, Mini-Mental State Examination.

J Clin Sleep Med. 2018;14(4):511–521.

PAP Effect on Cardiac/Pulmonary Vasc in OHS

- Purpose: assess the impact of non-invasive ventilation (NIV) or CPAP on cardiac structure and function assessed by echocardiography
- Secondary analysis of Pickwick study data
- N=221
- Comparative efficacy of 2 months of NIV (n=71), CPAP (n=80) and lifestyle modification (control group, n=70) on structural and functional echocardiographic changes

Thorax. **2018** Apr;73(4):361-368

Pickwick Project

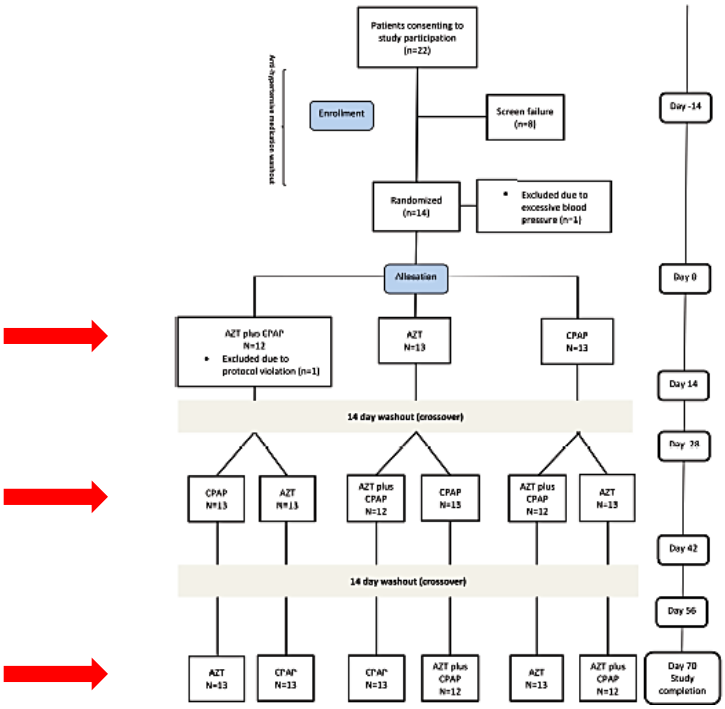
- Baseline
  - 55% pulmonary hypertension
  - 51% with LVH
- 2 mo Follow up
  - NIV lowered systolic pulmonary artery pressure (−3.4 mm Hg, 95% CI −5.3 to –1.5; adjusted P=0.025 vs control and P=0.033 vs CPAP)
  - Only NIV therapy decreased left ventricular hypertrophy with a significant reduction in left ventricular mass index (−5.7 g/m^2; 95% CI −11.0 to –4.4).
  - NIV led to a significant improvement in 6 min walk distance (32 m; 95% CI 19 to 46)
- Conclusion: NIV is more effective than CPAP and lifestyle modification in improving pulmonary hypertension, left ventricular hypertrophy and functional outcomes

Thorax. **2018** Apr;73(4):361-368

Acetazolamide for OSA/Hypertension

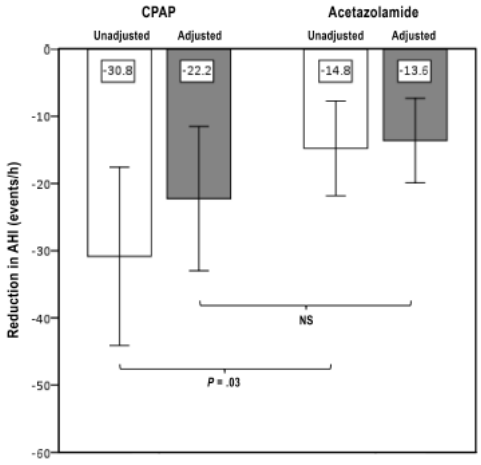
- Aim: To investigate the treatment effect of AZT alone and in combination with CPAP on blood pressure and AHI severity in patients with hypertension and OSA
- Prospective, randomized, three-way crossover study
- N=13 male patients with hypertension and moderate to severe OSA

J Clin Sleep Med. 2018;14(3):309–317.



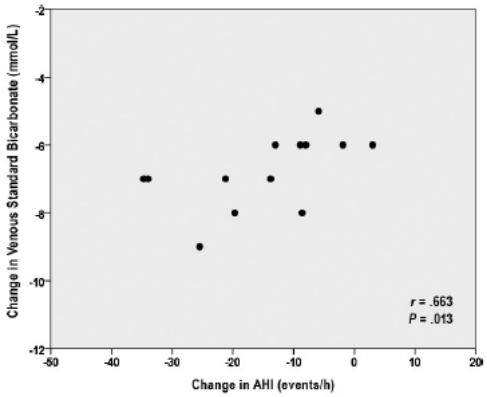
J Clin Sleep Med. 2018;14(3):309–317.

Figure 3—Reduction in AHI.



Mean unadjusted (white bars) and adherence-adjusted (gray bars) reduction in CPAP and acetazolamide groups. Shown is mean change of reduction in AHI and 95% confidence interval. AHI = apnea-hypopnea index, CPAP = continuous positive airway pressure, NS = nonsignificant.

Figure 4—Spearman correlation between change in venous standard bicarbonate concentration and change in AHI.



AHI = apnea-hypopnea index.

J Clin Sleep Med. 2018;14(3):309–317

Summary

- OSA is (still) highly prevalent in patients with AF
- Treatment of asymptomatic AF patients with mod-sev OSA did not improve recurrence of AF at 1-year (but study was underpowered)
- Risk of OSA, assessed by SB, is associated with increased incidence of post-op AF in CABG patients, but not with increased risk of reintubation or ICU LOS
- Treatment of AF in HFrEF patients (with pacers/defibrillators) with ASV reduces AF burden without increasing the risk of VT/VF. But the contraindication for primary CSA with HFrEF and ASV still stands.

Am Heart Assoc. 2018;7:e007221

Summary

- EDS in patients with moderate to severe sleep-disordered breathing independently predicts major adverse cardiac events.
- In patients with moderate to severe sleep-disordered breathing and without EDS, the probability of major adverse cardiac events at 36 months is similar to the 36-month outcome in those without sleep-disordered breathing.
- Meta-analysis of MACE and CPAP use this year suggests CPAP is favored for cardiovascular death and major adverse cardiac events.
- OSA is highly prevalent in stroke patients. Treatment with CPAP improves functional outcomes but has not yet been shown to reduce recurrent CVA/TIA

Am Heart Assoc. 2018;7:e007221

Summary

- NIV but not CPAP, in OHS patients from the Pickwick project, resulted in pulmonary artery pressure reduction (particularly when PA is elevated at baseline), improved LVH, and improved 6MWT
- Acetazolamide, both alone and in combination with PAP, lowered blood pressure significantly compared to CPAP alone.
- Acetazolamide reduced the AHI significantly and suggests further exploration of carbonic anhydrase inhibitors may be fruitful
- Take it all with a grain of salt.
- Don’t forget to treat your patient as a unique individual who likely doesn’t fit the mold of inclusion/exclusion criteria in these small trials

Am Heart Assoc. 2018;7:e007221

Thank you!