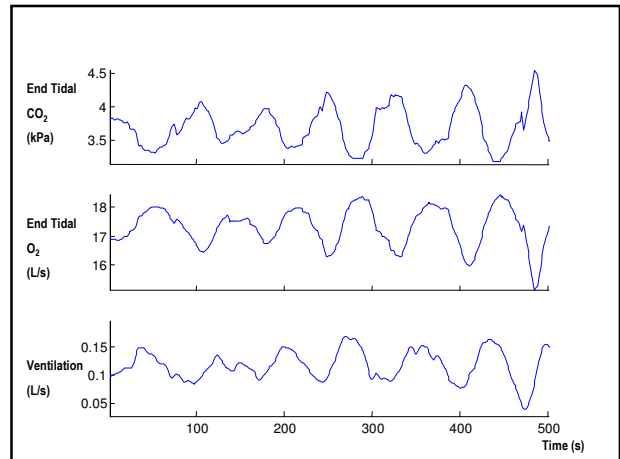
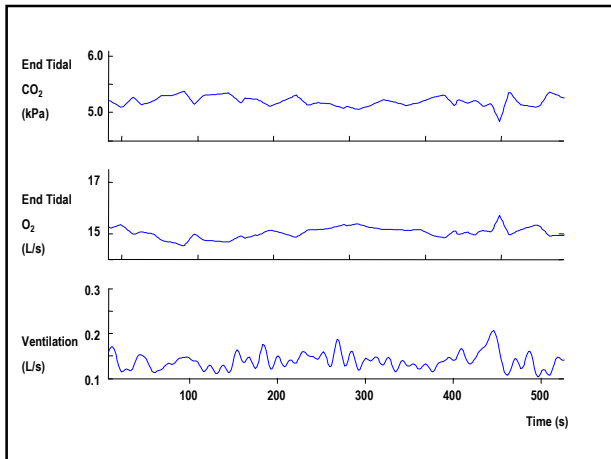
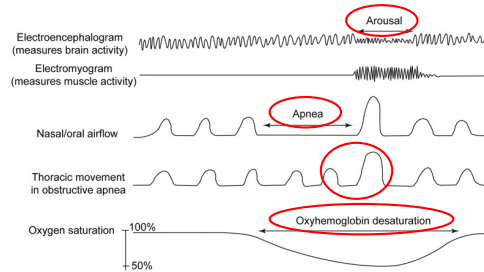


Sleep Apnoea a cardiovascular perspective

What is Sleep Apnoea Syndrome?

Obstructive Sleep Apnoea



Unstable ventilation in heart failure



John Cheyne
1777-1836

"a symptom which appears to belong to a **weakened state of heart**, it consists in the occurrence of a series of inspirations, **increasing** to a maximum, and then **declining** in force and length, until a state of apparent **apnoea** is established ..."

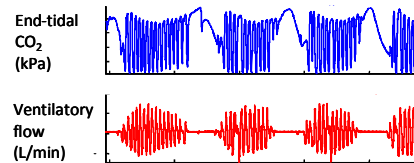
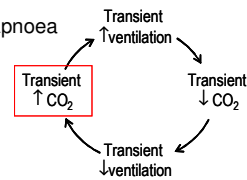


William Stokes
1804-1878

Fatty degeneration of the heart.
The Diseases of the Heart and Aorta.
Dublin, 1854

What is Sleep Apnoea Syndrome?

Central Sleep Apnoea



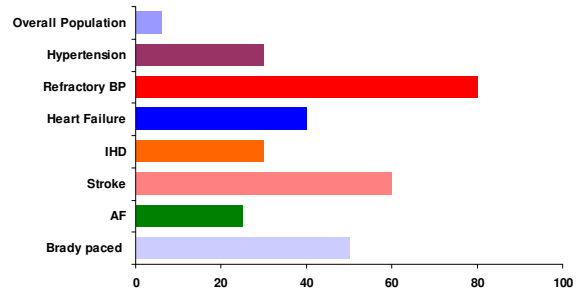
What is Sleep Apnoea Syndrome?

- Daytime symptoms of excessive daytime somnolence leading to
 - Cognitive impairment
 - Driving impairment
 - Personality/ mood disturbance
 - Depressed libido
 - Reduced quality of life

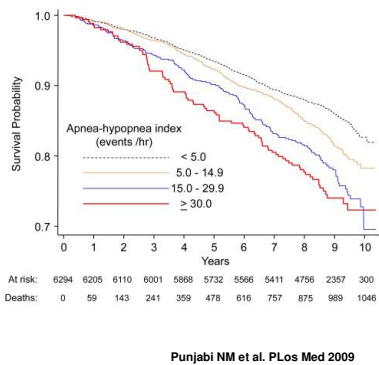


- Diagnosis
 - Questionnaire
 - Sleep Study

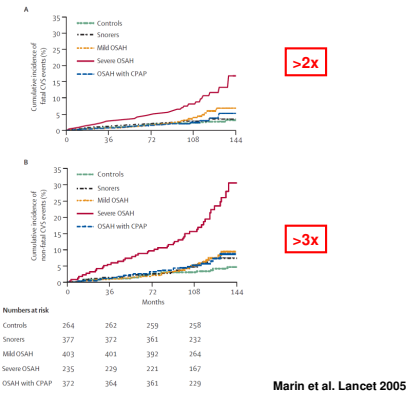
Prevalence of Sleep Apnoea



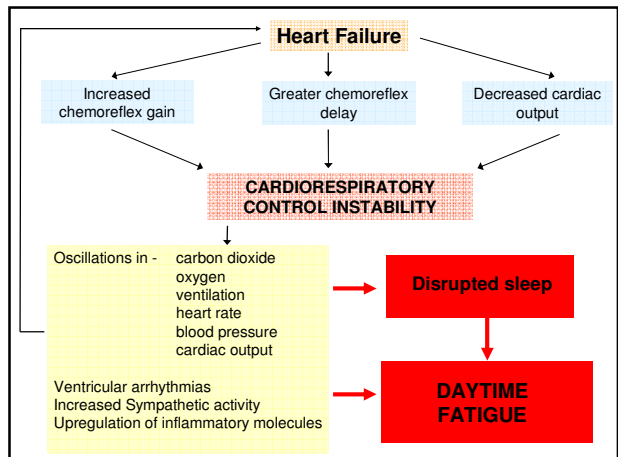
Sleep Apnoea and Mortality



Sleep Apnoea and CV fatal and non-fatal events



Treatment with CPAP



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EXPERT CONSENSUS DOCUMENT

Sleep Apnea and Cardiovascular Disease

An American Heart Association/American College of Cardiology Foundation Scientific Statement From the American Heart Association Council for High Blood Pressure Research, Professional Education Committee, Council on Clinical Cardiology, Stroke Council, and Council on Cardiovascular Nursing

Chest 2012;141:580-581
Circulation, 2011;124:2049-2051
Don C. Redfeard¹, and Mike Fitzpatrick²

CHEST ONLINE

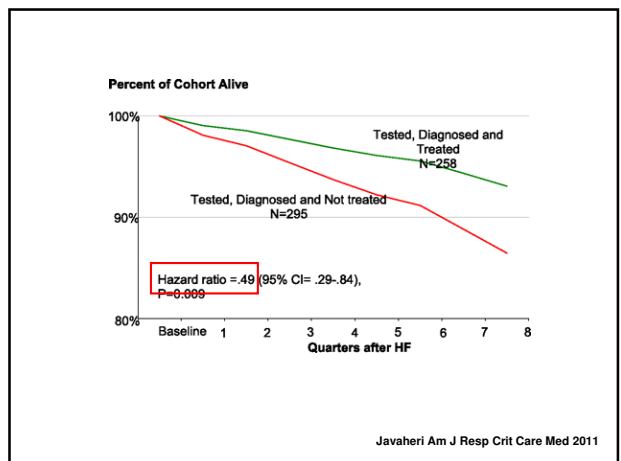
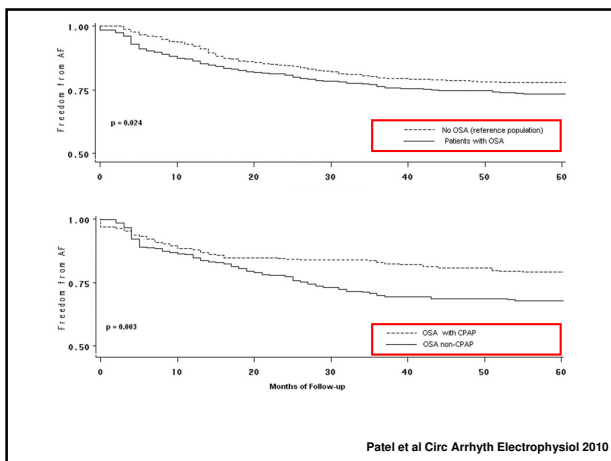
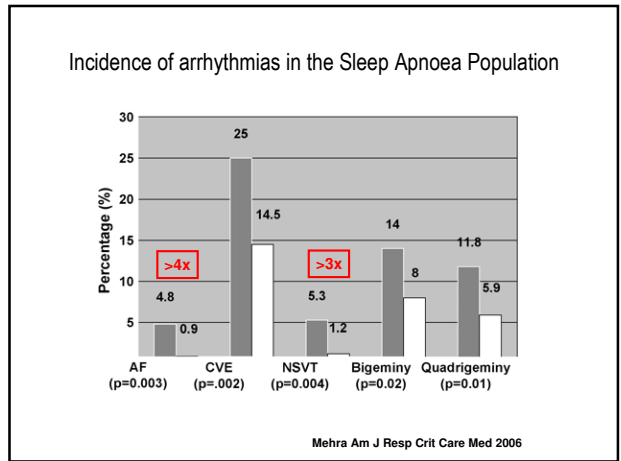
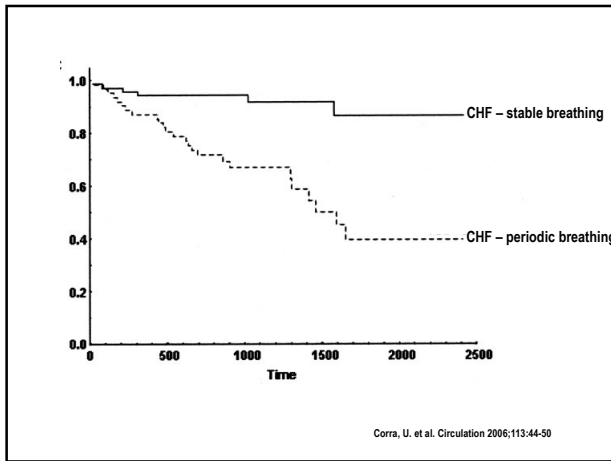
**Sleep and Exer
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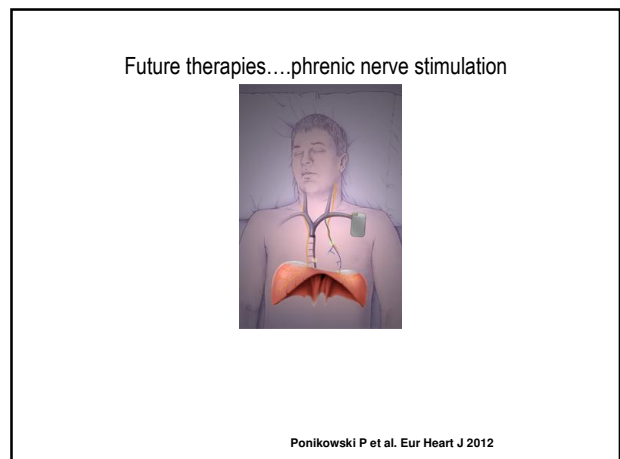
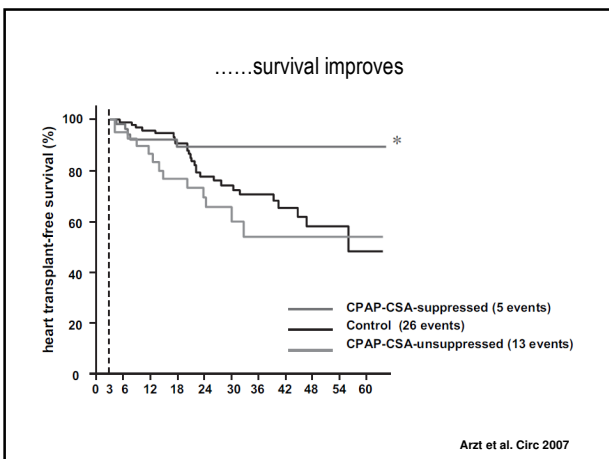
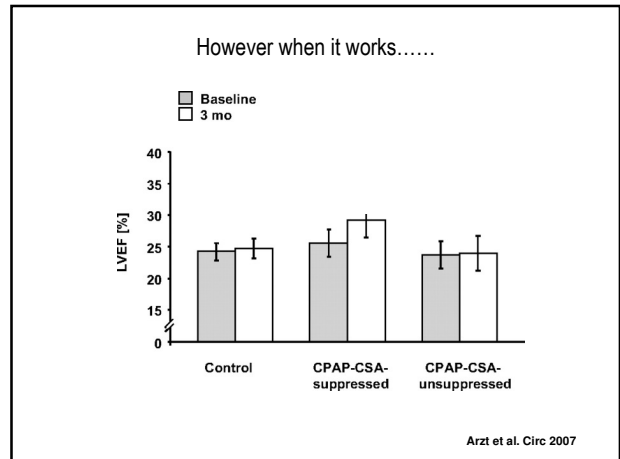
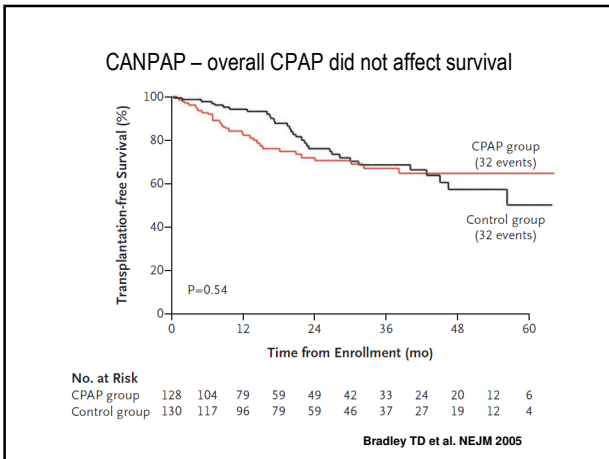
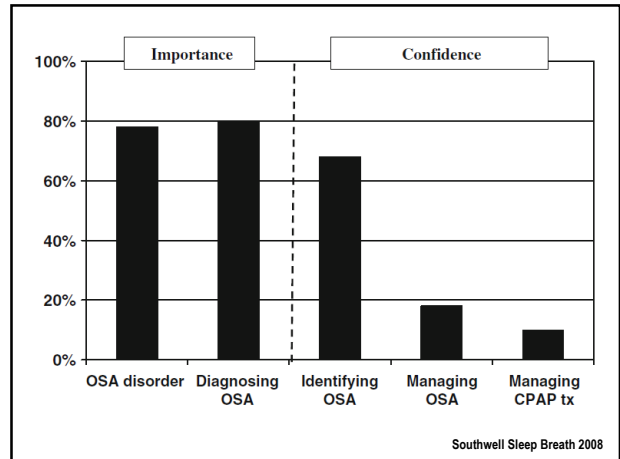
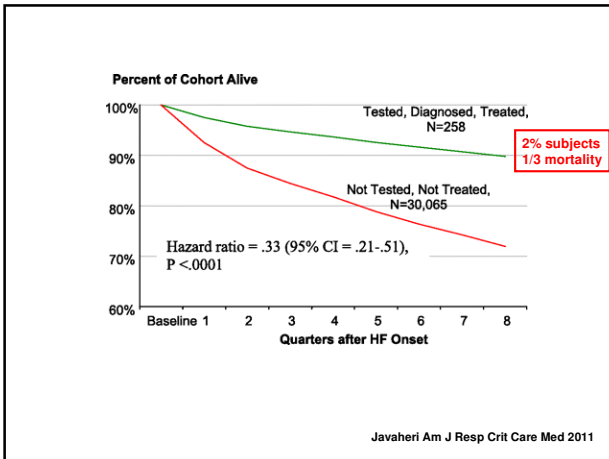
Ugo Corrà, MD; Massimo Pistono,
Andrea Giordano, PhD;
Marco Guen

Background—Sleep and exertional periodic h indicates poor prognosis. Whether these cc respiratory disorders in general, rather than :
Methods and Results—We studied 133 CHF 1170±631 days of follow-up, 31 patients (2 ventilatory response (VE/V_{O2} slope), and apu and prescription of β-blockers, and shorter tr (EOV), established by cyclic fluctuations in amplitude ≥15% of the average resting val P<0.01). Multivariable analysis selected AF 0.93, 95% CI 0.90 to 0.97, P<0.01), and β-b of cardiac events. The best cutoff for AHI wa 78% of EOV patients showed AHI >30h. >30h) or in combination (EOV plus AHI >: 6.65, 95% CI 2.6 to 17.1, P<0.01).
Conclusions—In CHF, EOV is significantly ass to total mortality, their combination has a cr

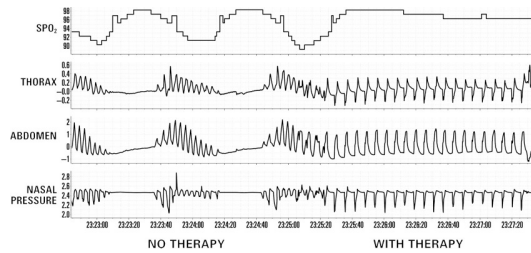
TABLE 1. Clinical, Echocardiographic, Sleep, Exercise, and Gas Exchange Data in the Total Population and in Survivors and Nonsurvivors

	Total Population	Survivors	Nonsurvivors
Patients, n	133	102	31
Age, y	58±10	58±11	58±7
Men	125 (94)	98 (96)	27 (87)
Cause of heart failure: Ischemic	85 (64)	66 (65)	19 (61)
Sinus rhythm	118 (88)	91 (89)	27 (87)
NYHA class	2.3±0.7	2.2±0.6	2.6±0.7
ACE inhibitors	127 (95)	99 (97)	28 (90)
Diuretics	123 (92)	93 (91)	30 (97)
β-Blocker (carvedilol)	71 (53)	60 (58)	11 (35)
LVEDVI, mL/m ²	134±44	130±43	146±49
LVEF, %	23±7	25±8	21±5
DT, ms	154±40	159±52	137±35
Peak V _{O2} , mL · kg ⁻¹ · min ⁻¹	14.5±4	15.2±4	12.2±2
% Predicted peak V _{O2}	51±12	52±12	44±8
VE/V _{O2} slope	34±10	31±7	38±10
EOV	28 (21)	15 (15)	13 (42)
Peak RER	1.16±0.09	1.17±0.09	1.15±0.10
Resting HR, bpm	78±12	78±11	76±15
Peak HR, bpm	124±21	126±21	114±18
Resting SBP, mm Hg	110±13	110±14	105±13
Peak SBP, mm Hg	141±27	145±23	131±26
AHI, ap/h	29±11	27±14	36±14





Future therapies...phrenic nerve stimulation



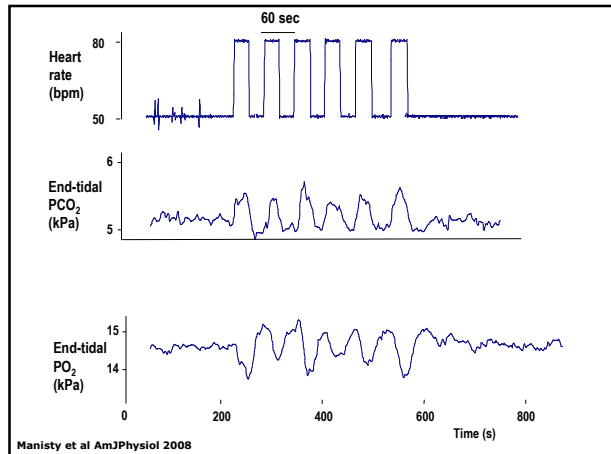
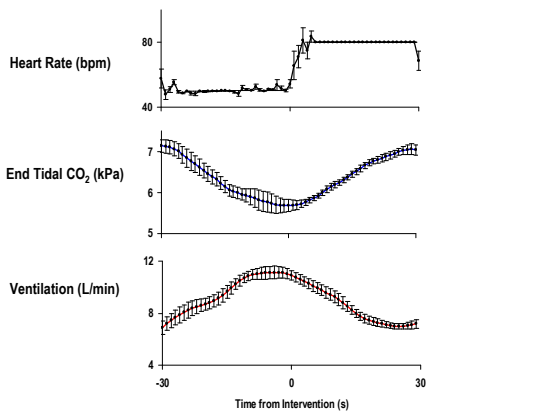
Ponikowski P et al. Eur Heart J 2012

Table 3 Categorical change in the severity of sleep apnoea based on the apnoea-hypopnoea index

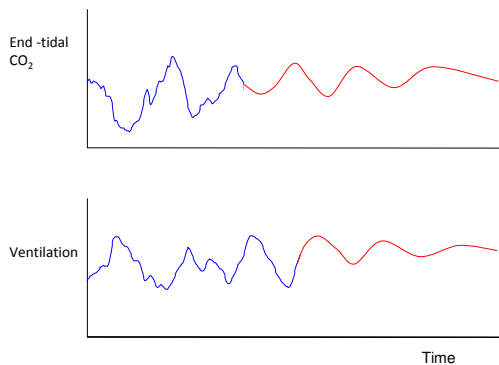
Severity/AHI (events/h)	Control night* (n = 16)	Therapy night* (n = 16)
Mild (<15)	0	5 (31.3%)
Moderate (15–30)	1 (6.3%)	8 (50.0%)
Severe (>30)	15 (93.8%)	3 (18.8%)

AHI, apnoea-hypopnoea index.
*Wilcoxon's matched pairs signed-rank test, P = 0.001.

Ponikowski P et al. Eur Heart J 2012



Dynamic Treatment



Sleep Apnoea – a cardiovascular perspective

- Reciprocal relationship between many cardiovascular conditions and sleep apnoea
- Treatment of sleep apnoea may ameliorate cardiovascular disorders (RCT lacking)
- (Non-treatment may impair success of cardiovascular treatments)
- New cardiovascular-based treatments emerging
- Screening available via pacemaker sensors

Why does sleep apnoea remain undiagnosed in cardiac patients?

- Patients under report symptoms
- Symptoms attributed to patient's underlying cardiac condition
- Signs not seen by clinicians as generally confined to sleep
- Diagnosis and management traditionally outside cardiologists' expertise
- Clinicians concerned about compliance with CPAP
- Large RCT of CPAP with hard end point data lacking
- Guidelines lacking concrete recommendations

Sleep Apnoea – a cardiovascular perspective

