



Quality of Life in Patients & Bed Partners of Patients treated with CPAP

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Disclosures

- Bill Lamb is employed by Hamilton Medical, Inc.
- There is NO potential conflict of interest regarding this topic.



Objectives

- *Recognize best practices to reinforce the use of CPAP therapy for Patients & their significant others*
- *Describe Continuous Positive Airway Pressure (CPAP) Therapy*
- *Discuss the benefits of CPAP for the OSA Patient*
- *Identify the Improvements in Quality of Life (QOL) for Bed Partners of Patients with Obstructive Sleep Apnea Receiving Treatment with CPAP*



Obstructive Sleep Apnea review:

Obstructive sleep apnea (**OSA**) is caused by the partial or complete collapse of the upper airway during sleep, which results in oxygen desaturation and transient nocturnal arousals and awakenings, causing marked distortion of the normal sleep pattern and leading to excessive daytime sleepiness



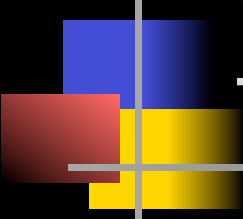
Obstructive Sleep Apnea review:

- Patients with undiagnosed and or untreated OSA are commonly lethargic and somnolent even under stimulating conditions.



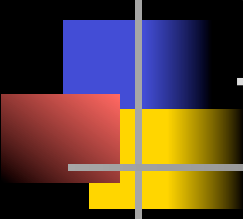
Obstructive Sleep Apnea review:

- As daytime sleepiness may impair patients' ability to drive and work, untreated OSA is a growing concern for automobile and occupation-related accidents.
- The risk for automobile accidents may be eight times higher in untreated OSA patients compared to the rest of the population.



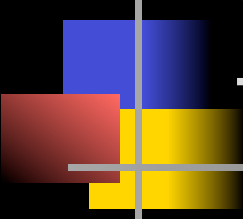
Obstructive Sleep Apnea review/ treatment:

- Since the early 1980s, continuous positive airway pressure (**CPAP**), applied through a nasal mask, or other interface, has been the primary modality for the treatment of patients with OSA



Obstructive Sleep Apnea review/ treatment:

- Although it is not curative, CPAP therapy prevents upper airway collapse, leading to a more restful night of sleep.
- CPAP Therapy helps restore normal sleep patterns and relieves daytime sleepiness.



Obstructive Sleep Apnea review/ treatment:

- THE EVIDENCE:
 - Several randomized controlled trials have demonstrated that, over a short period of time, CPAP relieves daytime sleepiness and improves the health-related quality of life (HRQL) of patients with OSA syndrome.



Obstructive Sleep Apnea review/ treatment/evidence:

- (*Chest*. 2002;122:1679-1685.)
- **Title: “Can Continuous Positive Airway Pressure Therapy Improve the General Health Status of Patients With Obstructive Sleep Apnea? A Clinical Effectiveness Study”**
- Study conducted to determine the short-term **and long-term** impacts of continuous positive airway pressure (CPAP) therapy on health-related quality of life (HRQL) in patients with obstructive sleep apnea (OSA).
- 723 patients into this study. Of these, 481 (66.2%) were men (242 Women). The mean age of the study participants was 49.4 ± 12.1 years.
- *Interventions:* All patients with AHI > 20 received CPAP therapy; those with AHI < 20 did not. The HRQL of all study participants was measured using the 36-item medical outcomes study short form (SF-36) questionnaire at baseline and then at 3 and 12 months of follow-up.



Short Form (SF-36)

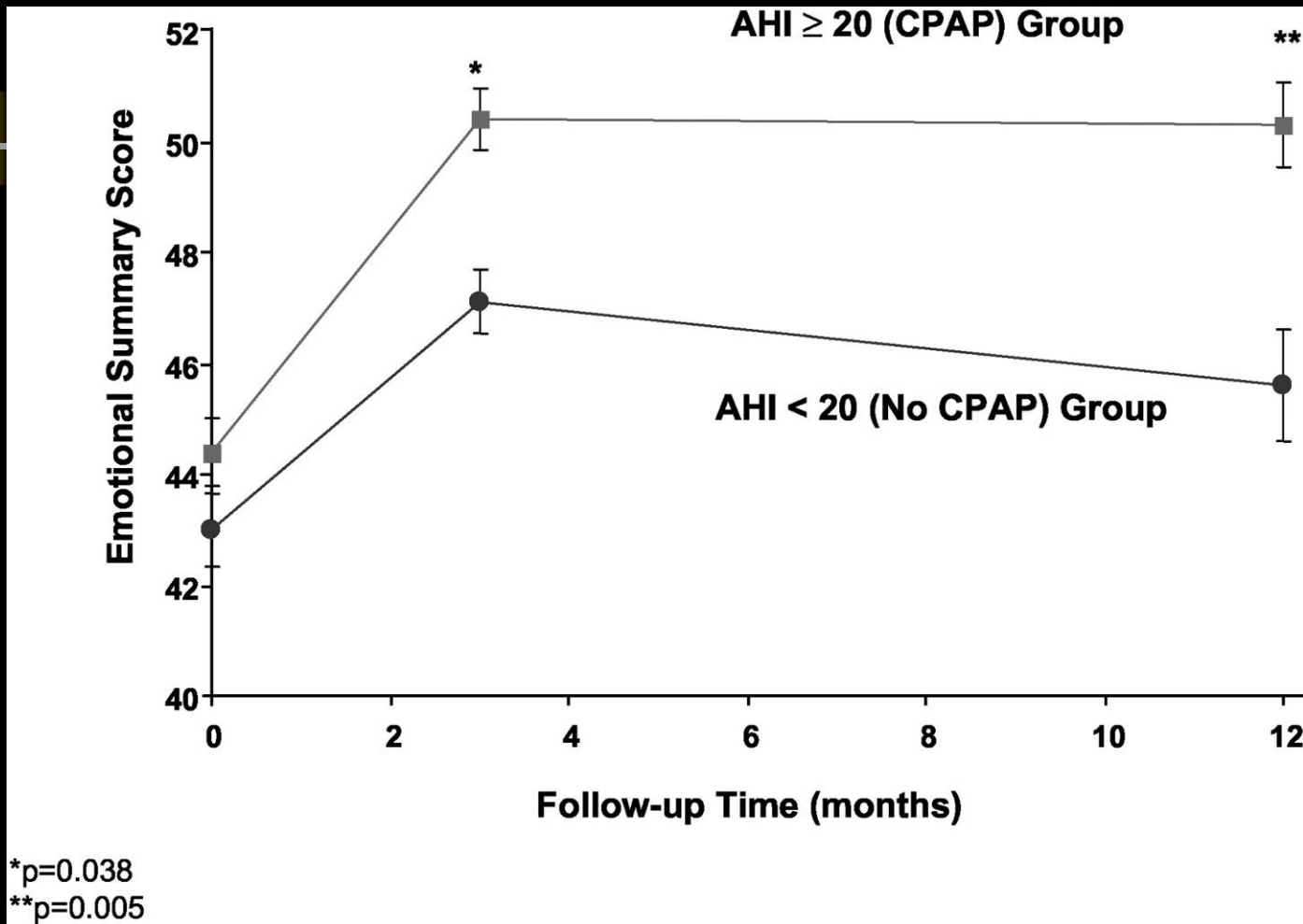
- The medical outcomes study short form (SF-36) questionnaire was used in this study because:
 - 1) It has been used extensively in other similar studies, which facilitates cross-comparisons of our findings with those of previous studies.
 - 2) the SF-36 has been shown to have excellent reliability, validity, and responsiveness for patients with OSA.
 - 3) the SF-36 has established normative scores for comparisons, making the scores easily understood by health services researchers and policy makers.
 - 4) compared to other generic health status measurements, the SF-36 has been shown to be more responsive to clinically relevant changes.



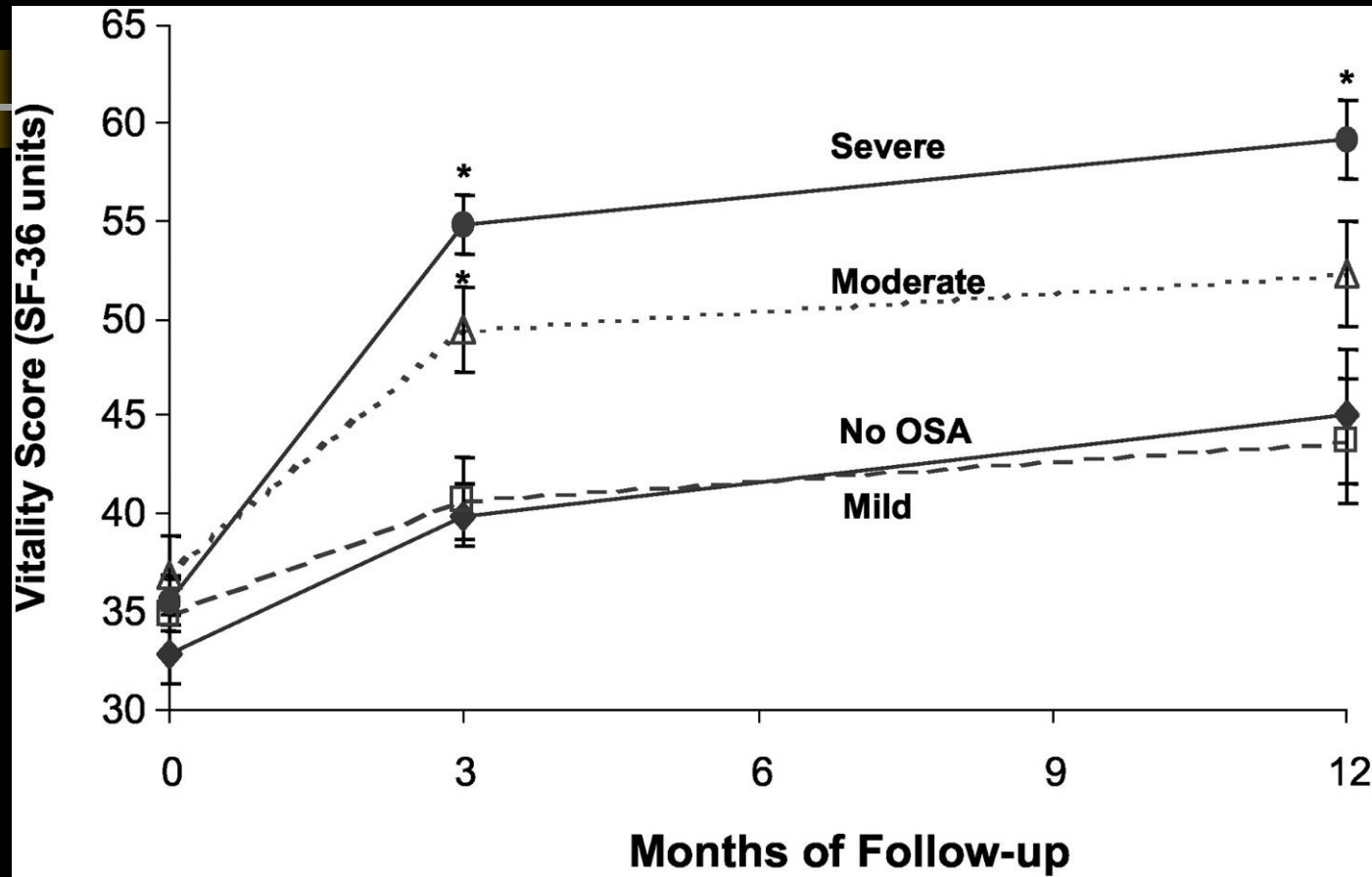
Medical outcomes study short form (SF-36) questionnaire

- The SF-36 is a 36-item survey instrument that quantitatively measures physical functioning and emotional health. ***Each variable has a potential score range of 0 (worst possible health) to 100 (best possible health).*** There are eight domains in the SF-36 (physical functioning; role-physical; bodily pain; general health perception; vitality; social functioning; role-emotional; and emotional health). These domains can be grouped into two categories, producing a **physical and an emotional** (component) summary score.

^ Is better



^ Is better





CPAP for OSA

- RESULTS:
- **Short & Long term benefits of CPAP:**
 - **Abolishes daytime sleepiness & lethargy**
 - **Improves vitality**
- **Although the SF-36 scores were similar at baseline, after 3 months of therapy, the CPAP group had higher adjusted emotional summary scores than did those who did not receive CPAP therapy (score increase, 1.72; 95% confidence interval [CI], 0.08 to 3.37). These improvements were maintained for 12 months. The gains in the SF-36 scores were most striking in the vitality domain (score increase, 10.52; 95% CI, 7.04 to 14.00 U increment). **The severe OSA group (ie, AHI > 40) experienced the largest benefit. Their adjusted vitality scores were 12.3 U higher (95% CI, 8.0 to 16.6) than those persons without OSA (ie, AHI < 5).****



Obstructive Sleep Apnea review/ treatment:

- Study Summary:
 - Evidence shows CPAP is an effective long-term therapy for improving the emotional health status of patients with OSA in the community, which is consistent with findings from previous long-term studies
 - Many untreated OSA patients experience poor health related quality of life. Rapid and sustained improvements in their health status can be achieved through CPAP therapy.



More Evidence:

Benefits of CPAP for the recipient

Obstructive Sleep Apnea (OSA) has been shown to affect the quality of life (QOL) in patients, and QOL improves after treatment with nasal continuous positive airway pressure (CPAP)

CHEST. 2003;124:942-947



Benefits of CPAP for the recipient

Table 1. Characteristics of Patients in Study Group*

Characteristics	Values
Age, yr	58.9 ± 14.1
Sex, %	
Male	87
Female	13
Height, cm	176 ± 8.8
Weight, kg	107 ± 32.2
BMI, kg/m ²	34.3 ± 9.5
Apnea-hypopnea index	48.4 ± 33.3

* Values given as mean ± SD, unless otherwise indicated. BMI = body mass index.

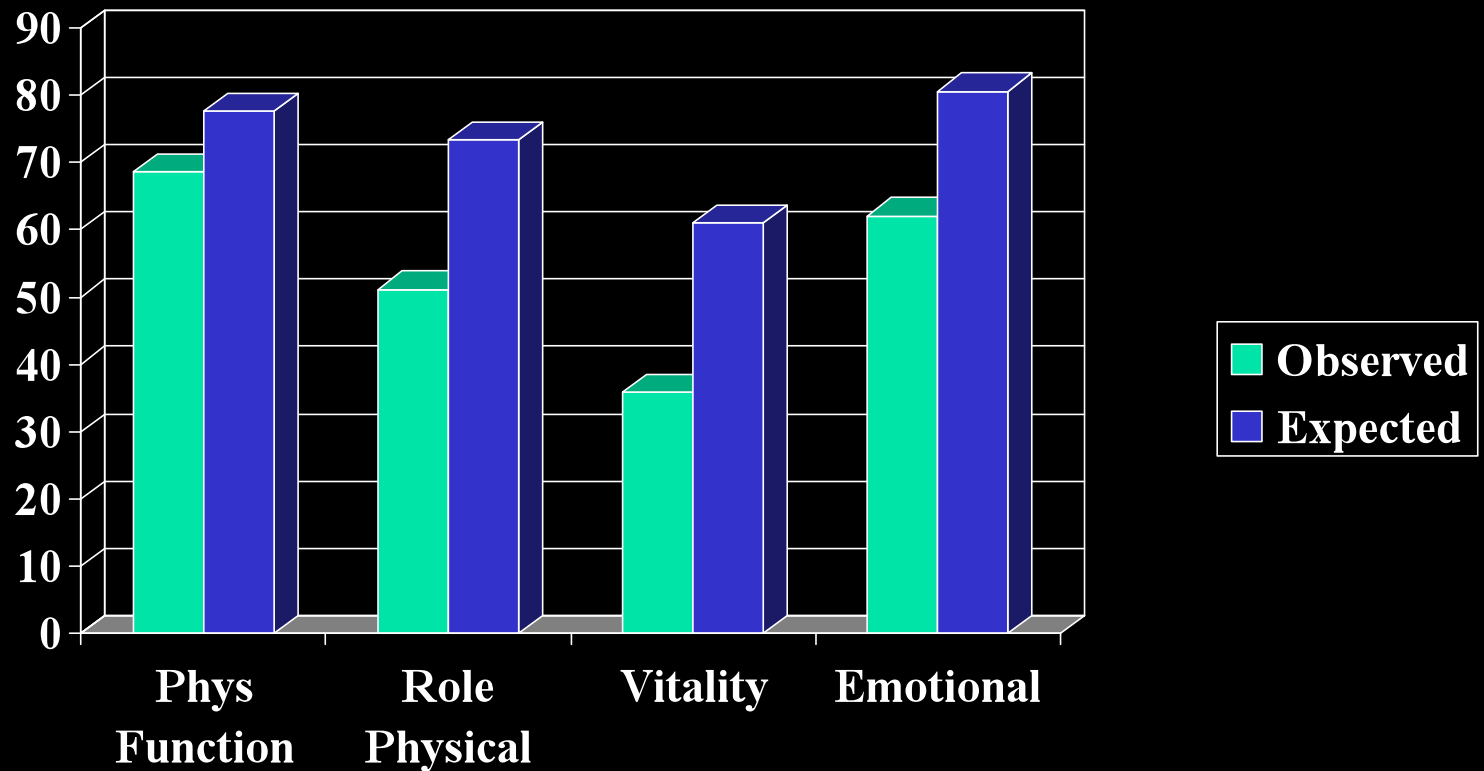
Benefits of CPAP for the recipient

Table 2. Comparison of the Baseline SF-36 Scores of Patients to National Norms* **BEFORE CPAP TX**

<u>Scale</u>	<u>Observed Values, Mean (SD)</u>	<u>95% CI</u>	<u>Expected Mean</u>	<u>p Value</u>
<i>PHYSICAL HEALTH:</i>				
Physical functioning	68.6 (26.3)	62.77-74.40	77.60	0.003
Role-Physical	51.2 (41.5)	42.06-60.41	73.74	<0.001
Bodily Pain	62.6 (25.3)	55.97-68.14	71.70	0.002
General Health	65.3 (23.5)	60.10-70.47	66.93	0.530
<i>MENTAL HEALTH</i>				
Vitality	35.8 (23.5)	30.61-40.99	61.00	<0.001
Social Functioning	71.3 (25.2)	65.72-76.88	61.00	<0.001
Role-Emotional	62.1 (40.4)	53.18-71.06	80.53	<0.001
Mental Health	72.0 (17.3)	68.18-75.82	76.53	0.021

^ = Good

Comparison of the Baseline SF-36 Scores of Patients to National Norms*
BEFORE CPAP TX



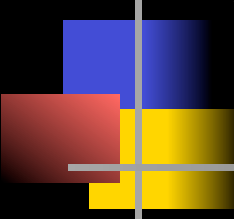


Epworth sleepiness scale (ESS) questionnaire

- **Quality-of-Life Measures**

The ESS is a widely used eight-item questionnaire that measures the subjective sensation of recent sleepiness. Subjects are asked to rate how likely they are to fall asleep, as opposed to just feeling tired, in eight specific quiet or relaxed situations. **The scale runs from zero (unlikely to fall asleep in any of the eight relaxed situations) to 24 (high chance of falling asleep in all eight situations).**

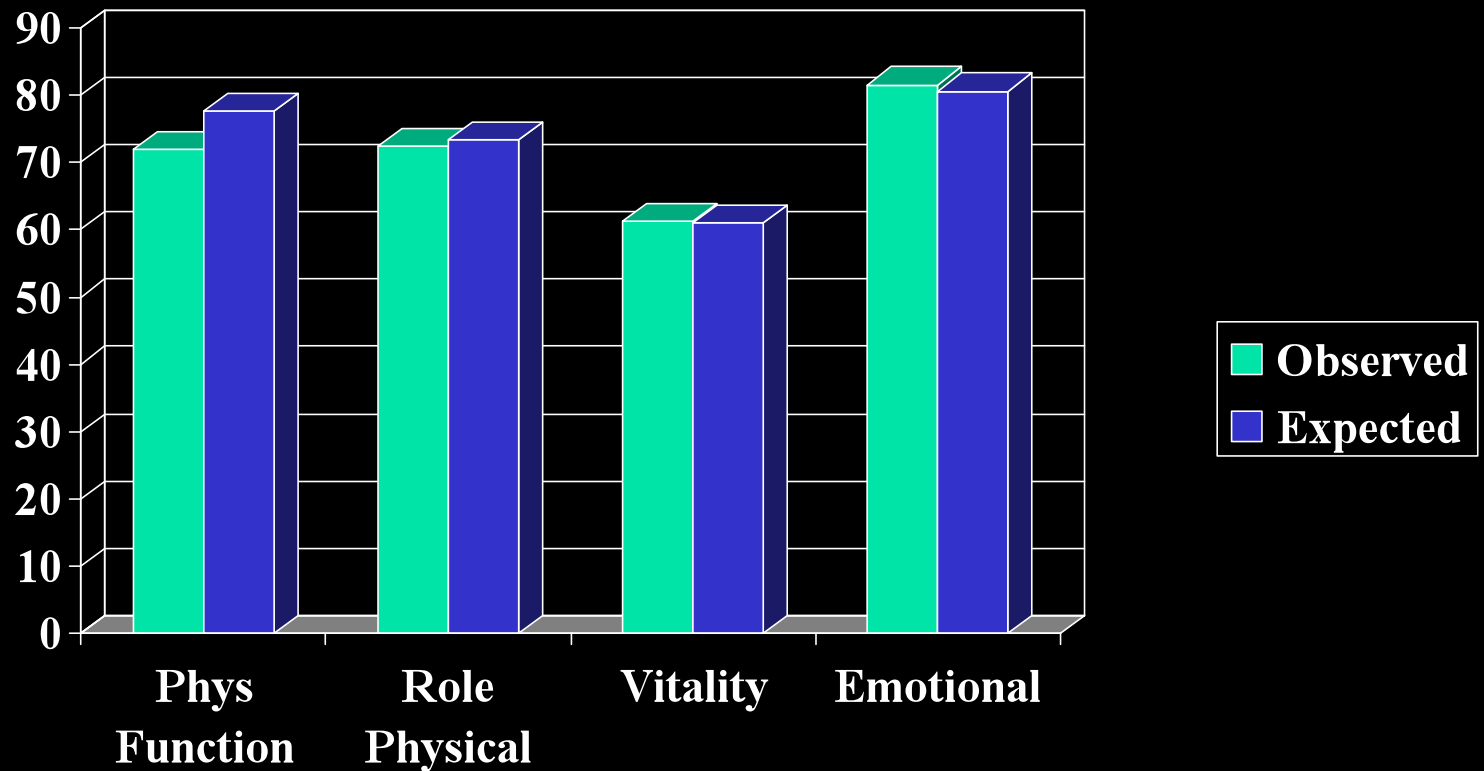
Table 4. Change in the Scores of Patients on the ESS and on the SF-36
After Treatment With CPAP*



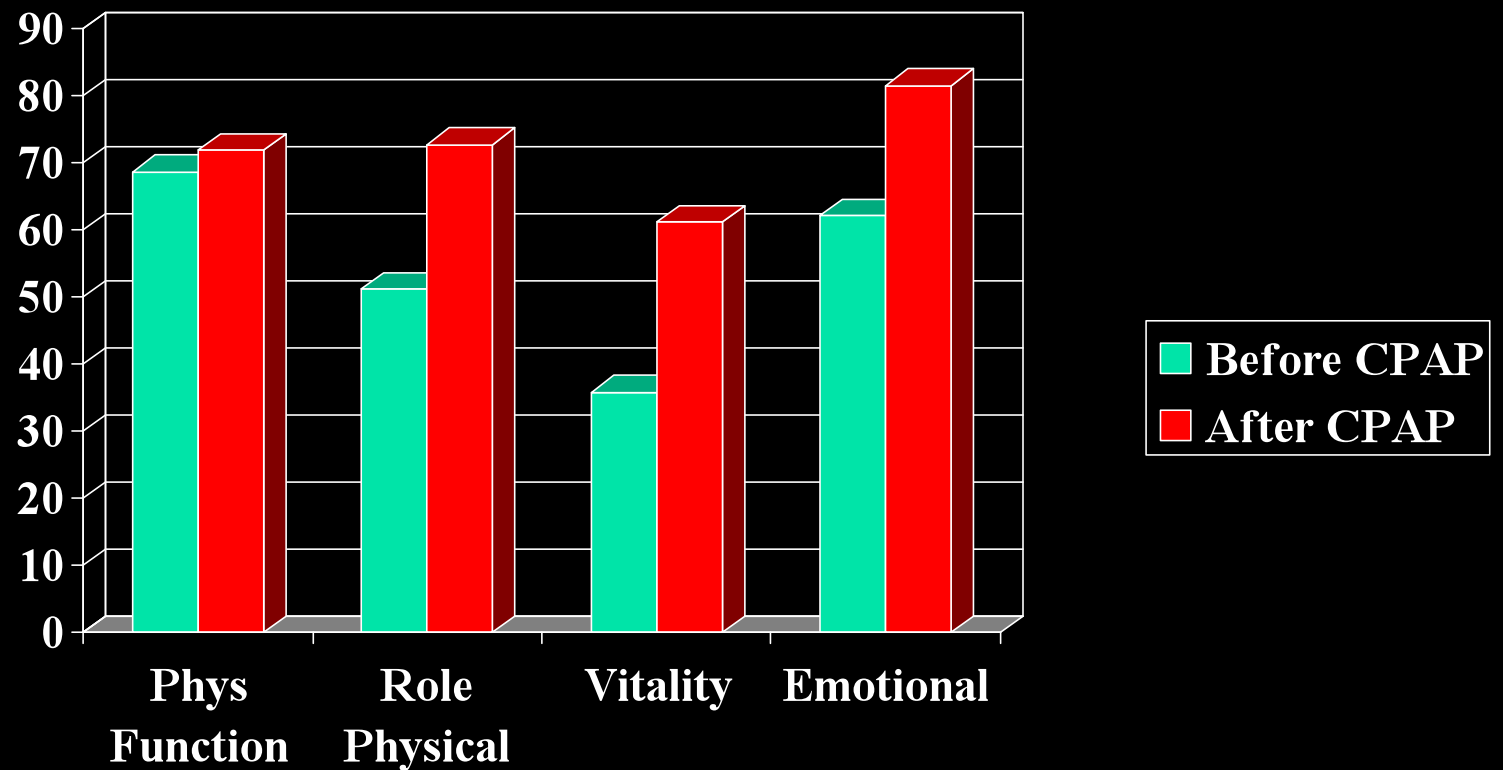
<u>Scale</u>	<u>Baseline</u>	<u>Post-treatment</u>	<u>Change</u>	<u>p Value</u>
ESS (^ bad)	12.9 (4.4)	7.3 (4.0)	-5.6 (4.7)	<0.001
SF-36 (^ good)				
Physical functioning	68.1 (26.0)	71.9 (27.4)	3.8 (18.7)	0.14
Role-physical	50.5 (40.8)	72.7 (37.7)	22.2 (44.2)	<0.001
Bodily pain	64.0 (22.7)	69.1 (25.7)	5.0 (24.3)	0.13
General health	68.6 (20.3)	71.3 (20.7)	2.6 (20.8)	0.36
Vitality	36.2 (25.5)	61.2 (22.4)	25.0 (30.6)	<0.001
Social functioning	71.7 (24.4)	85.6 (23.9)	13.9 (29.6)	0.001
Role-emotional	57.4 (41.2)	81.5 (34.7)	24.1 (40.7)	<0.001
Mental health	73.0 (16.0)	80.5 (19.2)	7.5 (18.1)	0.004

* Values given as mean (SD), unless otherwise indicated; n = 54.

Change in the Scores of Patients on the SF-36 After Treatment With CPAP Versus Expected



Change in the Scores of Patients on the SF-36 After Treatment With CPAP Versus Baseline





Benefits of CPAP for the Recipient

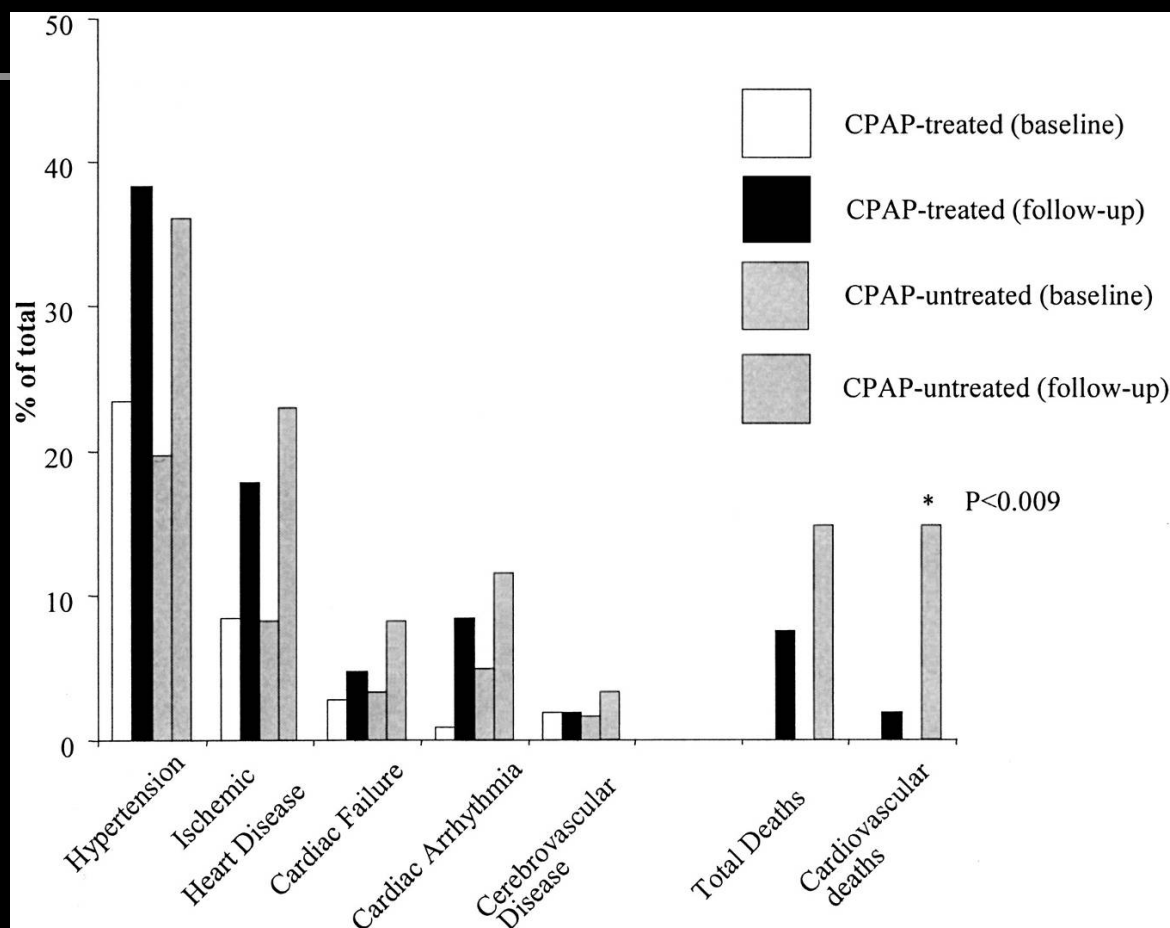
Study Conclusion: Evidence clearly shows the overall benefit (Physical & Mental) of CPAP Therapy in patients with OSA



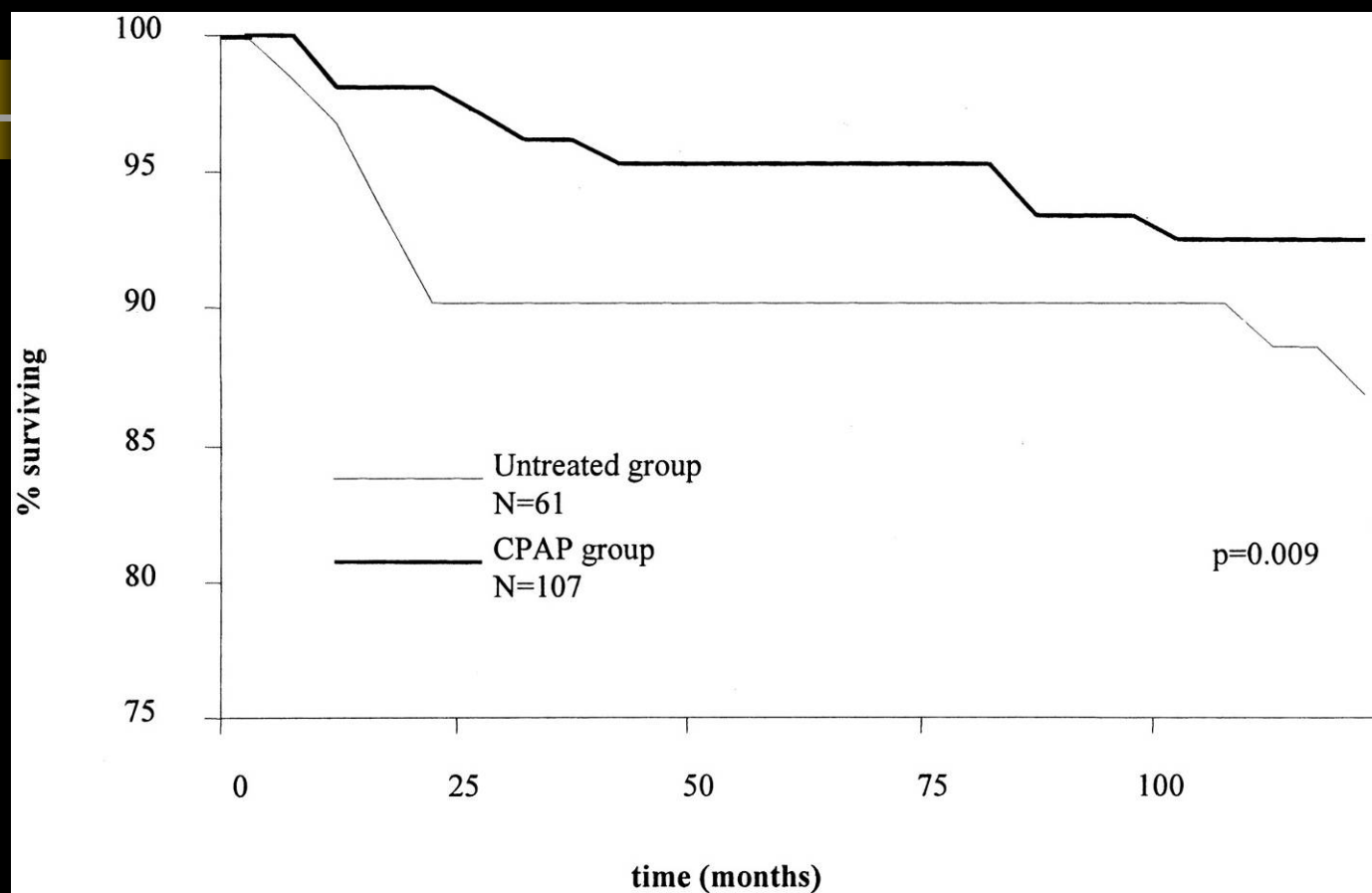
More evidence on Benefits of CPAP therapy for the Pt.

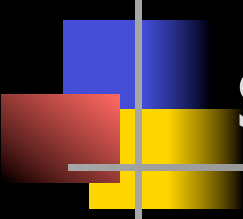
- CHEST/2005/127/2076-2084
- Long Term Effects of Nasal CPAP Therapy on Cardiovascular Outcomes in Sleep Apnea Syndrome
- Of OSA patients with previous cardiovascular risks, deaths from cardiovascular disease were more common in the group not treated (no CPAP) than the treated group (received CPAP); 14.8% vs. 1.9%
- Conclusion: data support a protective effect of CPAP therapy against death from cardiovascular disease in patients with previous cardiovascular disease & obstructive sleep apnea

Cardiovascular disease and mortality in CPAP-treated patients and untreated patients at baseline and follow-up



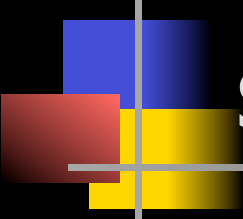
Kaplan-Meier survival curve for cardiovascular death in CPAP-treated patients and untreated patients





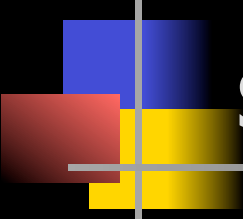
Obstructive sleep apnea syndrome and Asthma

- Alkhalil M, Schulman ES, Getsy J (2008) Ann Allergy Asthma Immunol. 101 (4), 350-7.
- OBJECTIVE: To review the concept of a possible link between asthma and obstructive sleep apnea syndrome (OSAS) and the impact on asthma symptoms of treatment of OSAS with continuous positive airway pressure



Obstructive sleep apnea syndrome and Asthma

- RESULTS:
- The data suggest that OSAS is an independent risk factor for asthma exacerbations.
- CPAP has been shown in prospective clinical studies to have a positive impact on asthma outcome in patients with concomitant OSAS.
- Ameliorative mechanisms of treatment with CPAP include mechanical and neuromechanical effects, gastroesophageal acid reflux suppression, local and systemic anti-inflammatory effects (including suppression of increased serum levels of inflammatory cytokines, chemokines, and vascular endothelial growth factor), cardiac function improvements, leptin level suppression, weight reduction, and sleep restoration.

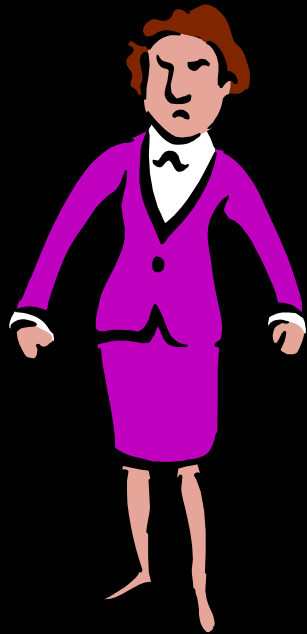


Obstructive sleep apnea syndrome and Asthma

- CONCLUSIONS:
- Asthma and OSAS are increasingly troublesome public health issues.
- Mounting evidence implicates OSAS as a risk factor for asthma exacerbations, thereby linking these 2 major epidemics.
- Despite the ever-increasing population of patients with both disorders, large, prospective, randomized controlled studies are necessary to more fully evaluate CPAP and asthma outcomes.

How might the CPAP patient's bed partner benefit from their loved one receiving CPAP therapy

- What's in it for me?





Benefits of CPAP for the Bed Partner?

Obstructive sleep apnea (OSA) has been shown to affect the quality of life (QOL) in patients, and QOL improves after treatment with nasal continuous positive airway pressure (CPAP). However, the effects on the bed partner of the patient with OSA had received little attention.....



Benefits of CPAP for the Bed Partner?

Chest. 2003;124:942-947

Study: Quality of Life in Bed Partners of Patients With Obstructive Sleep Apnea or Hypopnea After Treatment With Continuous Positive Airway Pressure

James M. Parish, MD, FCCP and Philip J. Lyng, MD

From the Division of Pulmonary Medicine, Mayo Clinic, Scottsdale, AZ



Quality of Life in Bed Partners of Patients With Obstructive Sleep Apnea/ CHEST 2003

Fifty-four patients and their bed partners who had been seen for evaluation of OSA, had undergone polysomnography, and subsequently had received treatment with **CPAP**. Patients and bed partners completed the Epworth sleepiness scale (ESS) and QOL questionnaires before and after the patients' CPAP therapy was initiated.



Benefits of CPAP for the Bed Partner

The spouse or bed partner of an individual with OSA also has disrupted sleep because of the patient's snoring, gasping, or choking respirations, or because of the bed partner's own concern about the patient's breathing pauses or other abnormal breathing.

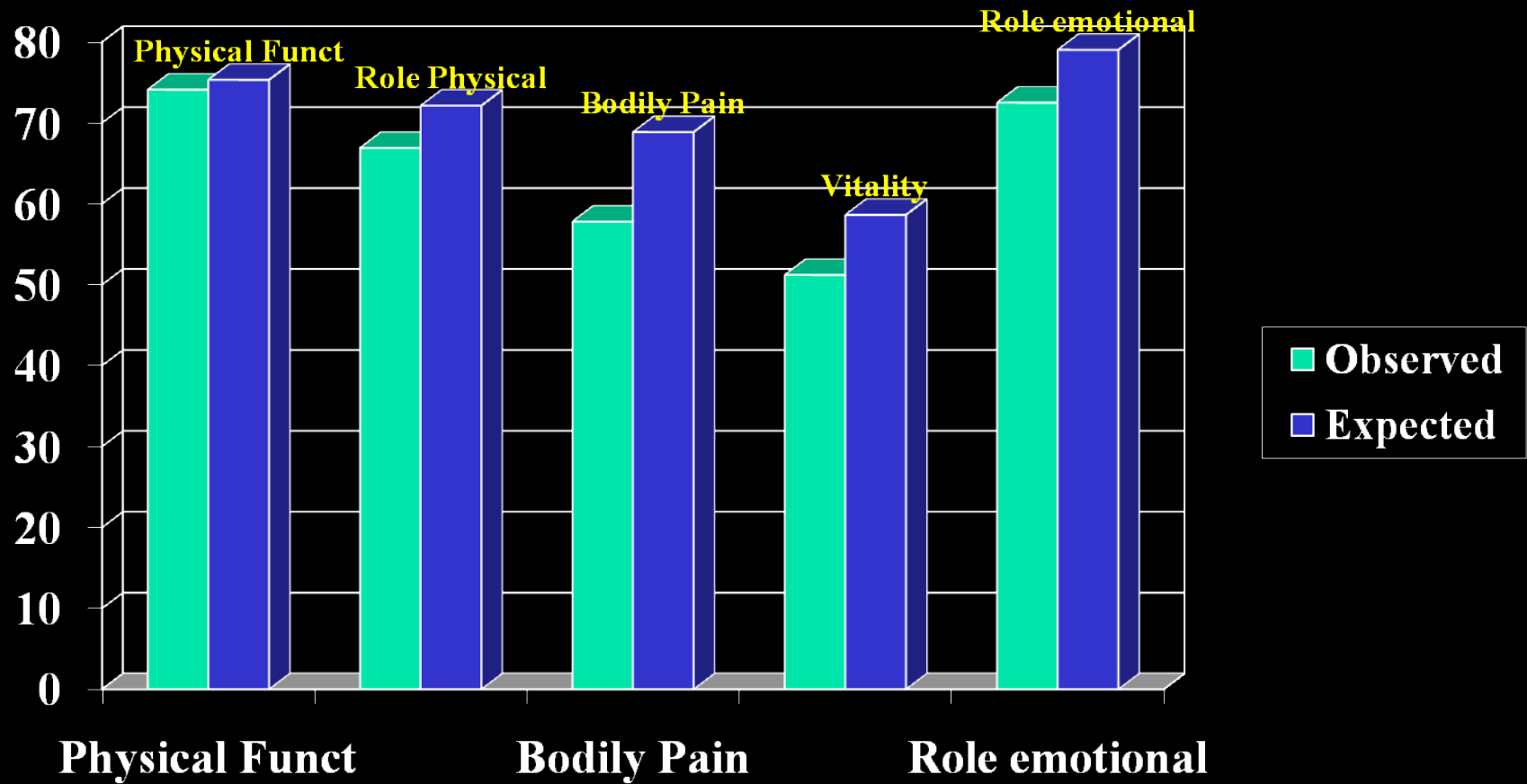
Spouses of patients with OSA also must cope with frequent arousals from sleep which affect their quality of life.

Benefits of CPAP for the Bed Partner?

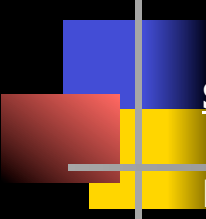
Table 3. Comparison of the Baseline SF-36 Scores of Bed Partners to National Norms* **BEFORE CPAP Initiated on the patient**

<u>Scale</u>	<u>Observed Values,</u> <u>Mean (SD)</u>	<u>95% CI</u>	<u>Expected</u>	<u>p Value</u>
<i>PHYSICAL HEALTH:</i>				
Physical functioning	74.1 (23.9)	65.38-82.86	75.31	0.51
Role-Physical	66.9 (44.2)	50.70-83.12	72.12	0.46
Bodily Pain	57.8 (22.5)	49.51-66.02	68.68	0.006
General Health	69.2 (22.4)	60.99-77.42	66.03	0.29
<i>MENTAL HEALTH</i>				
Vitality	51.2 (25.2)	41.96-60.40	58.63	0.10
Social Functioning	77.6 (27.8)	41.96-60.40	80.50	0.49
Role-Emotional	72.5 (39.9)	57.93-87.16	79.03	0.51
Mental Health	72.9 (21.1)	65.20-80.69	74.18	0.79

Comparison of the Baseline SF-36 Scores of **Bed Partners** to National Norms* BEFORE CPAP Initiated



Change in the Scores of Bed Partners of Patients on the ESS and the SF-36 After Bed Partner on CPAP



<u>SCALE</u>	<u>BASELINE</u>	<u>POST TX</u>	<u>CHANGE</u>	<u>p Value</u>
ESS	7.4 (6.1)	5.8 (4.7)	-1.6 (4.8)	0.02
SF -36				
Physical Functioning:	73.6 (24.9)	75.2 (24.5)	1.6 (22.1)	0.60
Role-physical:	68.1 (38.7)	79.2 (32.8)	11.1 (35.6)	0.03
Bodily Pain:	64.5(25.8)	69.6 (22.3)	5.1 (21.7)	0.09
General Health:	72.1(22.5)	72.4 (19.3)	0.2 (16.0)	0.92
Vitality:	51.0(25.4)	62.4 (20.7)	11.4 (24.4)	0.001
Social Functioning:	77.9 (26.8)	89.4 (14.3)	11.5 (24.1)	0.001
Role emotional:	75.3 (35.6)	82.1 (32.2)	6.8 (42.2)	0.24
Mental Health:	72.6 (21.2)	80.7 (11.5)	8.1 (22.7)	0.01

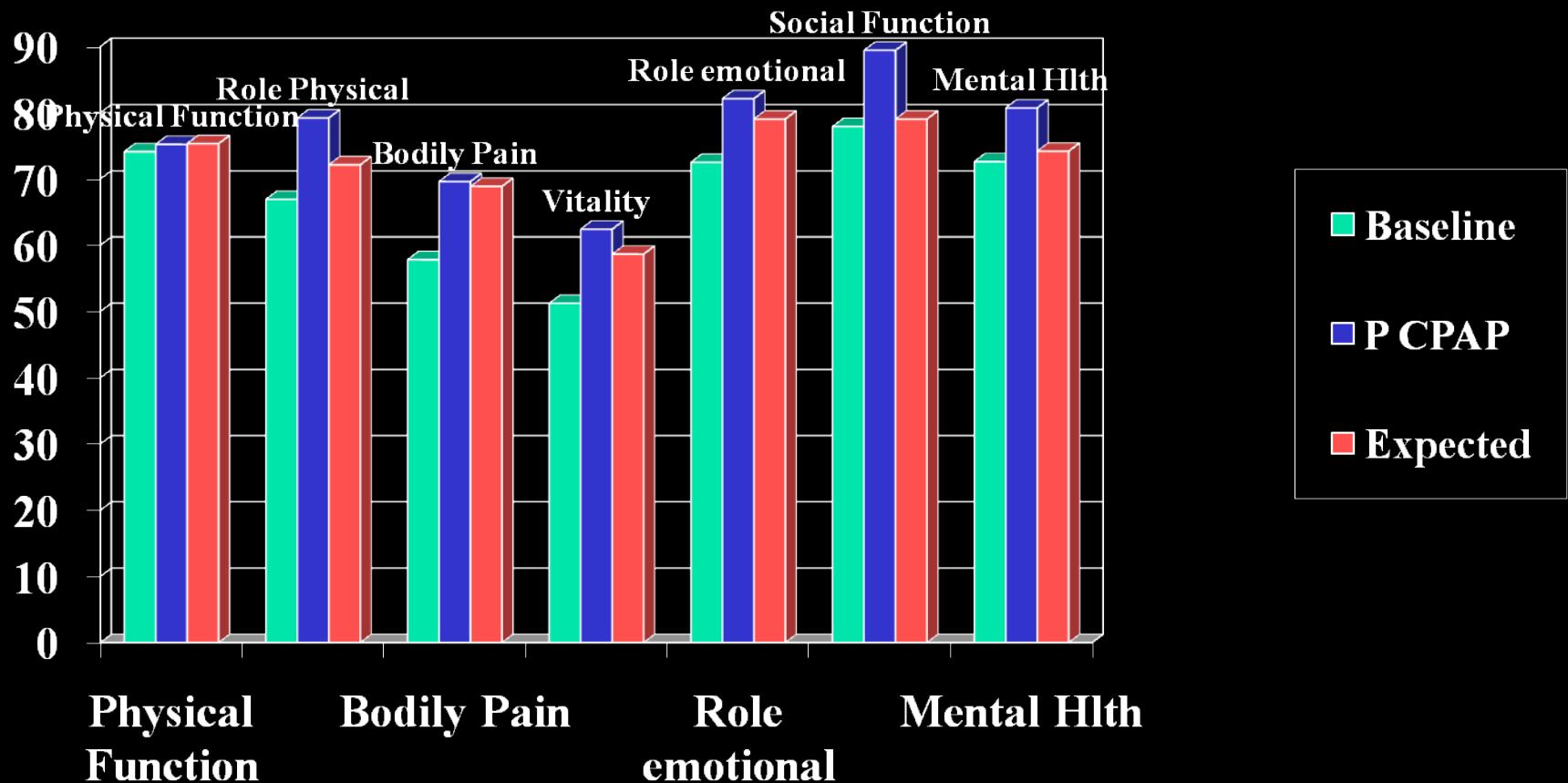
Table 5



Change in the Scores of Bed Partners of Patients on the ESS and the SF-36 After Treatment With CPAP vs. Expected

Scale	Baseline	Post Tx.	Expected
ESS	7.4	5.8	----
SF -36			
Physical Functioning	73.6	75.2	75.31
Role-Physical	68.1	79.2	72.2
Bodily Pain	64.5	69.6	68.68
General Health	69.2	72.4	66.03
Vitality	51.0	62.4	58.63
Social Function	77.9	89.4	80.50
Role-emotional	75.3	82.1	79.03
Mental Health	72.6	80.7	74.18

Change in the Scores of Bed Partners of Patients on the ESS and the SF-36 After Treatment With CPAP vs. Expected



Improvement in QOL for Bed partners of CPAP Patients cont..



WHAT ABOUT SEX!

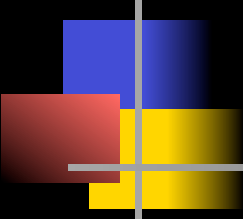
Erectile dysfunction, obstructive sleep apnea syndrome and nasal CPAP treatment. Gonclaves, et.al

- **BACKGROUND AND PURPOSE:** To evaluate the effect of one month of continuous positive airway pressure (CPAP) in a subgroup of obstructive sleep apnea (OSA) patients with erectile dysfunction (ED) and compare this subgroup with age- and body mass index (BMI)-matched OSA patients without ED.

PATIENTS AND METHODS: Prospective general, sleep, psychiatric and sexologic evaluations were conducted. Epworth Sleepiness Scale (ESS), Beck Depression Inventory (BDI), Sleep Disorders Questionnaire (SDQ), Quality of Life SF-36, and polysomnography were used. Seventeen OSA patients with ED were compared prior to CPAP treatment and during CPAP treatment with age- and BMI-matched OSA patients without ED. Parametric and non-parametric statistics, chi-square, Fisher exact test and multiple regression analyses were performed.

Erectile dysfunction, obstructive sleep apnea syndrome and nasal CPAP

treatment. Gonclaves, et.al Sleep Med. 2005 Jul;6(4):333-9

- 
- RESULTS: Ninety-eight men (BMI=28.8 kg/m², apnea-hypopnea index (AHI)=49.6 events/h, ESS=14.8, BDI=8.4, and lowest SaO₂=75.3%) were divided into subgroups of lowest SaO₂>80% (A) and lowest SaO₂< or =80% (B).
 - (A) Forty-six men had a mean lowest SaO₂ of 85.7%±2.9, AHI=29.5±17.6, age=46.3±9.3 years, ESS=13.6±4.2, BMI=25.8±4.8. **Seven of the patients had ED.**
 - (B) Fifty-two men had a mean lowest SaO₂=60.10±10.0%, AHI=67.4±24.5, BDI=9.0±6.9, age=47.4±9.4 years, ESS=16.2±4.4, BMI=31.4±5.1. **Twenty-one of the patients had ED** (chi²: P=0.006).
 - Significant variables for ED were lowest SaO₂ and age (r=0.17). CPAP-treated subgroup: ED subjects had significantly lower SaO₂, ESS, BDI and SF-36 subscale scores than OSA controls. **Nasal CPAP eliminated the differences between groups, and ED was resolved in 13 out of 17 cases.**



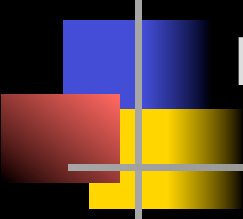
Erectile dysfunction, obstructive sleep apnea syndrome
and nasal CPAP treatment. Gonclaves, et.al

- **CONCLUSIONS:** ED in OSAS is related to nocturnal hypoxemia, and about 75% of those OSAS patients with ED treated with nasal CPAP showed remission at one-month follow-up, resulting in significant improvement in quality of life.



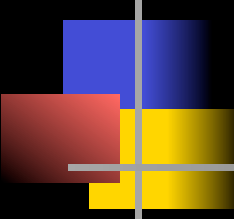
CPAP for OSA Benefits Both Patients & their Bed Partners!

- EVIDENCE Supports benefit for the patient AND Bed Partner



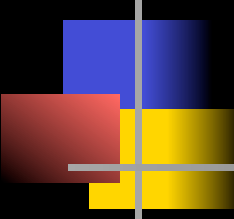
Long-term compliance with continuous positive airway pressure in patients with obstructive sleep apnea.

- Wolkove N, Baltzan M, Kamel H, Dabrusin R, Palayew M (2008) Can Respir J. 15 (7), 365-9.
- OBJECTIVE: To assess the long-term compliance of OSA patients with CPAP therapy.



Long-term compliance with continuous positive airway pressure in patients with obstructive sleep apnea.

- **RESULTS:** Patient demographics included mean (+/- SD) age (58+/-11 years), male sex (70 of 80 patients [88%]) and mean apnea-hypopnea index (70+/-44 events/ h). At the time of the interview (64.0+/-3.7 months after diagnosis),
- 43 of 80 patients (**54%**) were still using **CPAP** and most reported an **improvement in symptoms.**
- Twelve of 80 patients (**15%**) had abandoned **CPAP** after using it for **10.1+/-15.5 months**
- **25 of 80 patients (31%) had never commenced therapy** after initial diagnosis and CPAP titration. Analysis of scores reflecting initial patient sleepiness revealed a significant association of this symptom with subsequent CPAP compliance.



Long-term compliance with continuous positive airway pressure in patients with obstructive sleep apnea.

- **CONCLUSION:** Although many patients with OSA derive subjective benefit from, and adhere to treatment with CPAP, a significant proportion of those so diagnosed either do not initiate or eventually abandon therapy. Initial experience with CPAP appears to be important, reinforcing the need for early education and support in these patients.



Conclusions:

Obstructive Sleep Apnea results in impaired Quality Of Life in both the patients **and** their bed partners.

Evidence shows Treatment with **Continuous Positive Airway Pressure** improves Quality Of Life in both Patients *and their Bed Partners*



Summary: Benefits of CPAP for OSA patients & their Bed Partners

PRO *

Patient Sleeps better

Patient's Bed partner sleeps better

Patient & partner More alert during the day

Safer drivers

Improved Physical & Mental functions

Patient's Bed Partner there all night & when they wake*

Don't sleep at work*

Don't sleep during conversations, meetings, family reunions & visits*

Dream more*

* Some may consider a CON



Summary: Benefits of CPAP for patients with OSA:

Con:

Wear mask/ or other nasal interface
every night

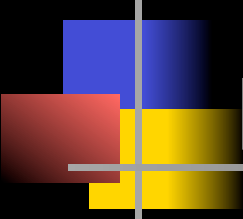
Take CPAP machine on road trips/
vacations

Always looking for power outlets at
hotels

Con (*for some, could be a PRO***)

Due to unusual breathing sounds, Bed Partner visualizes you as Darth Vader**





Encouragement & Advice for our patients

Wear your CPAP every night!!!!!!!!!!!!!!!!!!!!!!

Don't give up (communicate with your Doctor & provider if you are having problems)

Take your CPAP with you when traveling

Be patient & spend the time to make sure your interface is right



Encouragement & Advice for our patients

Bed Partners, wake em up and encourage them to put their CPAP on if they get up in the night and forget to put it back on (you benefit you both if you do this)

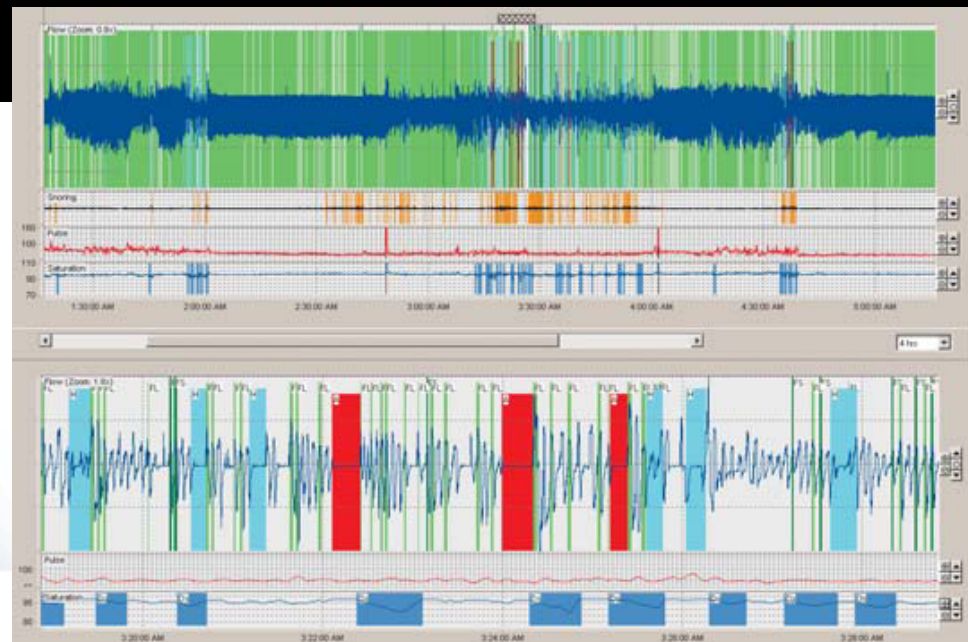
When you witness or hear of others describing their sleep problems, encourage them to get to a sleep specialist as soon as possible



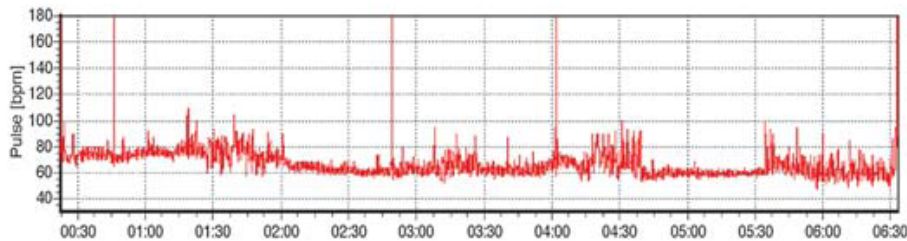
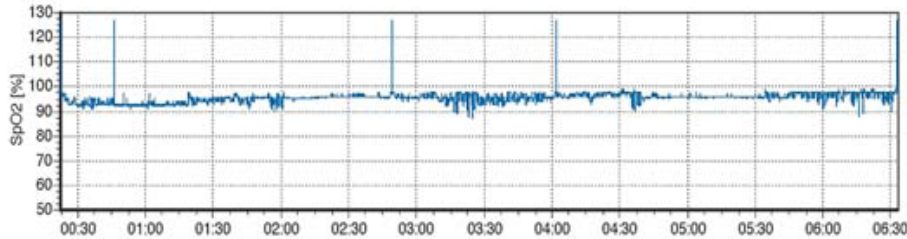
CPAP Therapy Summary

CPAP therapy can change your patient's life & Improve the quality of life of their bed partner & loved ones

Identify at Risk patients



Identify At Risk patients (incl. Peri Operatively)



Comments

ApneaLink - Report of 07.03.2006 10:45

Treating physician

Referral to

Patient data

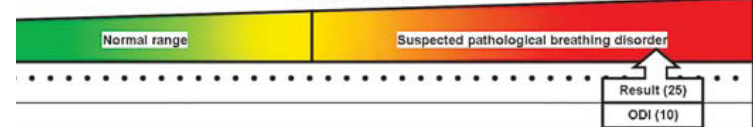
name: With Oximetry
Severe Risk
Age, City:
Date of birth: 12.12.2005
Time: 00:22 - 06:33
Duration: 6 h 10 min

Patient ID: 1234
DOB: 09.12.1944
Height: 0 cm
Weight: 0 kg
BMI: 0 kg/m²

Evaluation

Start: 00:32
End: 06:33
Duration: 5 h 58 min

Risk indicator



Situation from AH4 - points evaluation from FLFS (see Clinical Manual for more details)

Analysis

Parameter	Normal	Result
Average breaths per minute [bpm]:	< 5 / h	13,02
Breaths:	< 5	4671
Apneas:	< 5 / h	23
Hypopneas:	< 5 / h	97
Flow lim. Br. without Sn (FL):	< Approx. 60	2800
Flow lim. Br. with Sn (FS):	< Approx. 40	28
Snoring events:		342

Parameter	Normal	Result
evaluation period:	6 h 0 min	
Oxygen Desaturation Index*:	< 5 / h	60
SpO2 saturation:	94% - 98%	Saturation <= 90%: 1 min
SpO2 saturation:	90% - 98%	Saturation <= 85%: 0 min
SpO2 saturation:	95 %	Saturation <= 80%: 0 min

Parameter	Normal	Result
Minimum pulse frequency:	50 - 70 bpm	47
Maximum pulse frequency:	60 - 90 bpm	109
Average pulse frequency:	bpm	66

Analysis status: Analyzed automatically

Analysis parameters used (Default)

Apnea [20s, 10s, 60s, 1.0s], Hypopnea [50%, 10s, 100s, 1.0s], Snoring [0.0s, 0.3s, 3.5s, 0.5s], Desaturation [4.0%, 5s, 150s]

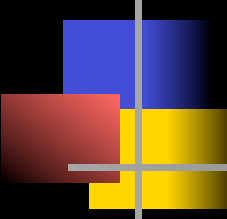
CPAP Therapy Works!





CPAP Works





Thanks to my Pulmonologist,
initially Gary Goldstein & now
Tom Siler & to BEMES Home
Medical (St Louis), my quality of
life is much better and my wife is
there when I wake in the
morning!

As I'm a CPAP Patient too!

Olga & Bill, AWAKE & in Fremantle, Western Australia



Thanks for your attention!



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