



**RESONEA**

# **Obstructive Sleep Apnea: Effective Intervention & Care**

**MeMD Telehealth Provider Training Modules**

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**RESONEA**

## **Module IV: Best Practices To Improve CPAP Adherence**

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# Module IV: Continuous Positive Airway Pressure (CPAP) Adherence

- The Problem
- Predictive Factors
- Interventions
- Multi-disciplinary Program Components
- Intervention Program Plan



# Module IV: The Problem

## ○ CPAP is an effective treatment for OSA

- Over thirty years of experience
- Safe, painless, harmless
- Efficacy documented in many clinical studies
  - ✓ Reduced day time sleepiness
  - ✓ Reduces other OSA symptoms and complications

## ○ Yet most patients – probably more than half – do not adhere to treatment

- If adherence is defined as use of CPAP  $\geq 4$  hours per night over 70% of nights, it is estimated that 29-83% of patients are non-adherent with treatment.<sup>1</sup>
- Several studies have documented that CPAP use  $\geq 6$  hours per night results in improved memory, improved daily functioning, and less daytime sleepiness.<sup>2</sup>
- It has also been shown that patients who used CPAP and then stopped treatment ceased to benefit:<sup>3</sup>
  - ✓ Daytime sleepiness and AHI deteriorate within days.
  - ✓ Worsening of urinary catecholamines, increased blood pressure and heart rate occur within 2 weeks.
  - ✓ Benefits for insulin resistance and psychomotor performance appear more durable following long-term CPAP use.

***CPAP is very effective, but patients must use it and remain on it to benefit from treatment.***

<sup>1</sup> Weaver 2008 ,2016

<sup>2</sup> Strandling 2000, Zimmerman 2006, Weaver 2007

<sup>3</sup> Kohler 2011



# Module IV: Factors Associated with CPAP Compliance

There is a lack of universal acceptance of the predictors of CPAP success,\* however there is general agreement regarding the importance of:

- 1) **The patient's baseline daytime sleepiness:** the worse it is to start with, the more likely to stay with CPAP.
- 2) **Positive initial experience** with CPAP, especially during the first week of therapy.
- 3) **Education and psychosocial support:**
  - prior to CPAP,
  - at initiation of treatment, and
  - during ongoing follow-up.



\* Weaver 2016

# Module IV: Factors Associated with Poor CPAP Adherence

## ○ Patient Factors

- Poor understanding of importance of the therapy
- Failure to understand instructions for use
- Self administration of sedative medications and/or alcohol
- Social isolation/lack of social support
- Feeling ill or too tired to use
- Physical limitations (vision, hearing, coordination) which impact the use of equipment
- Claustrophobic feelings triggered by mask
- Nasal congestion/blockage

## ○ CPAP Device Factors

- Complexity of equipment
- Mask discomfort or mask air pressure leakage
- Nasal dryness & air pressure related symptoms

## ○ Provider Factors

- Insufficient time spent educating patients on OSA dangers and treatment benefits
- Provider expressions of doubt regarding therapeutic potential of treatment
- Lack of provider awareness of patient's alcohol and sedative drug use
- Lack of a trusting relationship between patient and provider



*Adapted from AASM guidelines (Epstein 2009) and UpToDate: Adherence with continuous positive airway pressure (CPAP), Weaver 2016*

# Module IV: Interventions Associated with Improved CPAP Adherence

## ○ Choice of candidates for CPAP

- Greater success if treating those with more severe daytime sleepiness

## ○ Patient Education

- A 2014 Cochrane analysis of 30 studies involving 2047 patients concluded that short-term educational interventions result in a modest increase in CPAP usage.<sup>1</sup>

## ○ Side Effect Management

- Improved compliance with air humidification, mask readjustments, chinstraps, and multidisciplinary support are supported in several studies.<sup>2</sup>

## ○ Cognitive Behavioral Therapy

- A variety of interventions were found to be supported in several clinical trials.<sup>1,3</sup>

## ○ Psychosocial Support

- RCT data includes interventions combined with OSA education<sup>1</sup> as well as motivation enhancement interviews.<sup>4</sup>

## ○ Telehealth Interventions

- Studies demonstrate the interventional benefits of telephonic coaching and texting of reminders.<sup>5</sup>



<sup>1</sup> Wozniak 2014 <sup>2</sup> Engleman 2003 <sup>3</sup> Richards 2007 <sup>4</sup> Bakker 2016 , Olsen 2012 <sup>5</sup> Sedkaoui 2012, Munafo 2016

# Module IV: Improved CPAP Devices Have Increased Patient Acceptance

- **More compact units** – smaller footprint & less obtrusive in the bedroom; more convenient for travel



- **Improved features:**

- Silent machines
- Heated humidifiers
- Heated air tubes (no condensation)



- **Improved masks:** including “nasal pillow” and cannula types, which are more comfortable and alleviate feelings of claustrophobia



- **Auto-titrating CPAP (APAP)** - allowing for lower pressures, gradual pressure ramping, and greater patient comfort





# Module IV: Multidisciplinary Program Components

## ○ Medical Providers (primary MD, PA, NP)

- Patient education at time of diagnosis and prior to CPAP
- Encouragement and support
- Orders the CPAP and supplies; specifies pressures settings
- Receives communication from CPAP equipment provider (Respiratory Therapist, Sleep Technician)
  - ✓ Any issues identified during CPAP equipment orientation
  - ✓ Any issues identified after the first night on therapy
  - ✓ Status summary after the first week of CPAP
- Follow-up on response to treatment
- Encouragement and support calls to the patient
- Case Manager at provider's practice to track and coordinate

## ○ CPAP Equipment Provider

- Mask-fitting – in person, online sizing
- Rehearsals – brief, daytime trials of CPAP to get accustomed to the sensation
- Following the first night and during the first week of therapy – trouble shoot patients having initial difficulty and communicate any issues with provider

## ○ Therapeutic Adherence Program (TAP)

- DROWZLE with texting reminders
- Scheduled telephonic follow-up and encouragement from Medical providers
- Periodic follow-up with CPAP equipment provider



# Module IV: Provider Role In CPAP Adherence

- **Intervention to assist in CPAP adherence is a new role for most providers**
  - Most providers have not participated in an organized CPAP adherence program
- **However, primary care clinicians understand that effective chronic care management combines several knowledge and skill sets:**
  - ✓ Familiarity and comfort with the technical issues involved
  - ✓ Patient educator function
  - ✓ Communication/coordination with others on care team
  - ✓ Role as a quarterback to the care team and coach to the patient
  - ✓ Trouble-shooting
  - ✓ Primary care provider as “psychiatrist” or counselor



# Module IV: Provider Patient Education “Check List” – The Basics

## ○ Cover the basics of OSA:

- Intermittent airway obstruction during sleep
  - The airway tends to narrow during sleep as structures “relax”
  - Aging, obesity, anatomy will predispose some to airway collapse
- ✓ Use your own words, tailored to the specific patient.
  - ✓ Supplement with written or on-line materials provided by Resonea.

## ○ Words That Can Work:

**“OSA is caused because your air passages temporarily collapse during sleep and you cannot breathe.”**

**“Your airway is a flexible tube; with OSA, your tongue muscles relax in sleep to the point where the tongue collapses back against the airway, pressing it closed and blocking the flow of oxygen.**

**“Normally the muscles in your throat help to keep the airway open. However, with aging and weight gain, those muscle fibers relax and nerve signals diminish, making it easier for the airway to collapse, particularly when lying flat on your back.”**

**“When your airway is collapsed, your normal breathing stops and an interruption in breathing occurs. When this gap in breathing lasts 10 seconds or more, it is called an “apnea.” In people with OSA, apneas can occur dozens of times per hour and hundreds of times per night. Repeated apneas reduce the oxygen saturation in your blood stream, so that your body’s tissues and organs do not get the oxygen supply they need during sleep.”**



# Module IV: Provider Patient Education “Check List” – The Consequences

## ○ Instruct On Why OSA Is So Serious:

- Fragmentation of sleep with subsequent day time sleepiness
- Epinephrine surges cause increased blood pressure, stress on the vascular system, inflammation and a hyper-coagulable state.
- OSA increases the risk for accidents, hypertension, diabetes, heart failure, myocardial infarction, arrhythmias, stroke, dementia, and depression.
- People with OSA feel poorly - day time sleepiness and other symptoms, including headaches, GERD, irritable mood, forgetfulness or difficulty concentrating, nocturia, and erectile dysfunction.

## ○ Words That Can Work:

**“With sleep apnea, instead of feeling rested and revitalized after sleep, your body feels like it has run a marathon.”**

**“Untreated OSA can cause harmful short-term and long-term effects to your mental and physical health and impact your mood, memory, your alertness, your performance at work, your relationships, and quality of life in general.”**

**“Untreated OSA can cause troubling symptoms, including headaches, heartburn, forgetfulness or mental foginess, excessive urination, and sexual dysfunction.”**

**“And if left untreated, OSA can cause or worsen other diseases like high blood pressure, diabetes, heart attack, stroke, depression, and dementia.”**

**“Left untreated, OSA significantly increases the risk of having a serious or fatal automobile accident.”**



# Module IV: Provider Patient Education “Check List” – Benefits of Treatment

## ○ Emphasize The Benefits of Treatment:

- CPAP treatment reduces daytime sleepiness – this beneficial effect can be dramatic and has been proven in dozens of controlled clinical trials. Reduced daytime sleepiness with CPAP treatment has been experienced in tens of thousands of patients.
- Treatment of OSA reduces the risk of accidents, as well as the risk for diseases such as hypertension, diabetes, heart failure, myocardial infarction, arrhythmias, stroke, and depression.
- Treatment can reduce troubling symptoms associated with OSA, such as headaches, GERD, irritable mood, forgetfulness or difficulty concentrating, nocturia, and erectile dysfunction.

## ○ Words That Can Work:

### ***The top ten reasons why patients should want to be treated for OSA***

- 1) You will feel better if you are treated.
- 2) You will feel better if you are treated.
- 3) You will feel better if you are treated.
- 4) You will live healthier.
- 5) You will probably live longer.
- 6) Your bed partner will very likely be happier.
- 7) Your sex life will benefit from treatment.
- 8) Everyone else will be safer, because you will be less likely to cause an accident.
- 9) Most OSA treatments involve some effort, but are not painful and those who use them adjust well.
- 10) ***You will feel better if you are treated.***



# Module IV: Provider Support and Encouragement

## ○ Remind the Patient :

- Thousands of people like them are using CPAP successfully.
- You (and the CPAP machine provider) are there for them if they have questions.
- This is important and it takes some work especially in the beginning... but success will come.

## ○ Words That Can Work:

“You can do this and we are here to help.”

“Using CPAP is not difficult. Driving a car or using a computer are way more complicated.”

“CPAP masks look a bit scary, but they are not painful.”

“Bed partners can’t see the mask during the night but they can hear the snoring.”

“If you have difficulty, you have not failed – we just need to make adjustments and try again.”

“This may seem like work ... because it is! But if you stay with this, success will come and you *will feel better.*”



# Module IV: Involve The Spouse/Bed-Partner

- **The patient's partner can be an important ally:**
  - Motivated – reduce the snoring & improve /maintain health of the significant other
  - Physically present with the patient
    - ✓ **Remind**
    - ✓ **Assist**
    - ✓ **Encourage**
- **Words That Can Work:**

“ Many patients who have made a successful adjustment to using CPAP have found that their partner's help made a big difference.”

“Your encouragement can have a major influence here.”



# Module IV: CPAP and APAP Pressure Settings

- CPAP machines deliver positive air pressure between 4 and 20 cm H<sub>2</sub>O.
- Patients using fixed dose CPAP machines are placed on a single pressure setting.\*
  - The setting is typically determined during a “titration study” usually performed in a sleep lab.
  - Titration studies entail gradual increases in pressure until apnea/hypopnea episodes are eliminated.
  - CPAP pressure determined during a titration study can optimize elimination of apnea/hypopnea episodes...
    - ✓ But cannot vary with patient changes during a given night (i.e. cannot increase during deeper sleep), and
    - ✓ Cannot change over time (with weight variation or fluctuation in sedative or alcohol intake near bedtime).
- Patients using APAP will receive positive pressure over a range, between a low and a high setting\*
  - Within this range, the machine will vary pressures throughout the night, adjusting to the patient's breathing
  - APAP machines accomplish these gradual changes with pressure sensors and software algorithms:
    - The pressure delivered is gradually increased until airflow is adequate, then gradually decreased until obstruction returns. The patient receives the lowest pressure possible to maintain airway patency.*
  - Therefore, APAP provides automatic adjustment of pressure based on the patient’s changing circumstance during the night or over time (weight, sedation, depth of sleep, etc.).
- Both fixed CPAP and APAP machines have a “ramp-up” function, allowing for lower pressures during the first hour of the night, to improve tolerability as the patient drifts off to sleep.



\* Brown 2016



# Module IV: CPAP vs APAP

- Fixed dose CPAP and APAP have similar, excellent outcomes.
- Randomized controlled trials comparing fixed dose CPAP and APAP demonstrate comparable improvement in AHI and daytime sleepiness.<sup>1,2</sup>
  - Several studies document better compliance and patient preference for APAP
  - In particular patients, who require higher CPAP pressures prefer APAP<sup>3</sup>
  - Comparative studies did not include patients with co-morbidities such as COPD or CHF
  - Therefore the American Academy of Sleep Medicine has recommended that APAP be avoided<sup>4</sup> in patients with:
    - ✓ Congestive heart failure (CHF)
    - ✓ Chronic obstructive lung disease (COPD)
    - ✓ Central sleep apnea syndromes
    - ✓ Hypoventilation syndromes (from neuromuscular diseases or obesity)

<sup>1</sup> Ip 2012    <sup>2</sup> Brown 2016    <sup>3</sup> Massie 2003    <sup>4</sup> Morganthaler 2008



# Module IV: Provider Ordering of CPAP, Supplies & Settings

## ○ CPAP requires a prescription, which should include:

- Patient's name, date of birth, address and phone
- Prescriber's name, medical number and contact info
- Patient's diagnosis: **“obstructive sleep apnea” ICD-10 CM code G47.33**
- If fixed-dose CPAP:
  - ✓ “CPAP” and “CPAP supplies - mask and tubing”
  - ✓ Pressure: \_\_\_\_ CM/H<sub>2</sub>O (Indicate the pressure obtained from titration study and patients mask preference if determined in the lab)
- If APAP:
  - ✓ “Auto-adjusting CPAP”
  - ✓ Pressure range: 4-20 CM/H<sub>2</sub>O



# Module IV: Teamwork To Optimize Patient's Early Experience

- **A positive initial experience with CPAP is crucial for success!**
  - It's very important that each patient receive OSA education and encouragement prior to starting treatment.
  - Prior to the first night of treatment, the equipment provider should:
    - ✓ Perform a careful mask fit.
    - ✓ Instruct patient on use of the CPAP/APAP machine.
    - ✓ Do a rehearsal run with patient to trouble-shoot for problems.
    - ✓ Report any problems to the provider – actions may be needed prior to starting treatment.
- **The equipment provider should make a follow-up call to the patient on the morning after the first night, to identify issues and provide encouragement.**
- **During the first week of treatment, there should be several calls to the patient – divided between the equipment provider and the treating provider.**
- **Coordination and communication between the patient, treating provider, and the equipment provider is crucial:**
  - ✓ This might be best achieved with a *case manager* at the treating provider's practice.
  - ✓ The patient should feel that there is a *team that is communicating* with each other.
  - ✓ The patient should feel that the treatment team is *working together* to help achieve success.

*It's really bad when patients feel that the left hand doesn't know what the right hand is doing. We see this a great deal in clinical care and too often in OSA, when patients begin CPAP.*



# Module IV: Follow-up and Ongoing Support

- **Within several weeks of initiation of CPAP, there should be a patient-provider encounter :**
  - Assess patient's symptom (i.e. day time sleepiness) response to CPAP.
  - Review compliance data from CPAP machine.
  - Review AHI data (some CPAP units are capable of producing an inferred AHI).
  - Discuss any problems patient is having with CPAP.
  - Provide encouragement and support.
- **Follow-up encounters:**
  - Patient should be followed in an ongoing manner.
  - Frequency analogous to how patients are followed for diabetes: more frequently initially, especially if there are problems; then at regular intervals, even when all seems well.
- **Periodic follow-up should also occur with the CPAP equipment provider:**
  - Masks and tubing wear out, which can cause air pressure leaks.
  - Other equipment issues can be addressed.
- **Additional therapeutic adherence interventions can include:**
  - Telephone calls from practice Case Manager.
  - Automated texting encouragement or simple "check-in" questions, to which patients reply.
  - Uploads of CPAP data with alert triggers (i.e., gaps in adherence, adverse changes in AHI).
  - Use of the DROWZLE App periodically to monitor symptoms or risk factors.



# Module IV: Patient Problems With CPAP

During initiation or ongoing treatment with CPAP, patients may experience these problems:

## ○ Mask Interface

- Proper fit is crucial for patient comfort, optimal pressure, and adherence.
- APAP cannot function properly if there is a mask air leak.
- Often several different masks need to be tried in order to find the one that a patient will tolerate & use.
- Types of masks include “full face,” which cover nose and mouth, and “nasal pillow” masks that just cover the nose; there are numerous designs and materials offered by different CPAP manufacturers, to broadly accommodate patient preferences.
- Nasal pillow masks can be more comfortable, but may not work well if patient requires CPAP pressures  $>12$  cm/H<sub>2</sub>O



## ○ Nasal congestion- best to ask patient about nasal symptoms proactively - before starting CPAP

- It is difficult to tolerate CPAP if congested.
- Congestion might precede or be triggered by CPAP.
- Antihistamines (oral or topical), topical ipatropium, and topical steroid nose sprays can be helpful.
- Some patients may benefit from a full-face mask.



# Module IV: Patient Problems With CPAP (continued)

- **Mouth breathing with nasal pillows:**
  - Some patients breath through their mouth when asleep.
  - In many patients using CPAP delivered through a nasal pillow mask, the air pressure inhibits mouth-breathing and snoring.
  - However, some patients will continue to breathe through their mouth, and the air introduced nasally will leak out of the open mouth.
  - A chin strap can be used to hold the mouth closed, resolving this problem.
  - Other patients may require changing to a full-face mask
- **Dry mouth**
  - Usually caused by mouth breathing – chin strap can help
  - Can also be caused by poorly functioning humidifier in CPAP machine. Patient should check water levels in their machine before and after use – water level should be lower in the morning if humidifier working correctly
- **Facial hair:**
  - Patients with beards or mustaches may experience air leak with full-face masks.
  - These patients may do better with nasal pillows.
- **Claustrophobia:**
  - Nasal pillows are less likely to induce these feelings than other masks.
  - Wearing the mask during the day, for increasingly longer periods, may help to acclimate the patient.
- **Aerophagia**
  - Air swallowing may cause belching, abdominal cramping, GERD, flatulence
  - An iterative process can help: Changing mask type, changing the CPAP settings, changing the CPAP from fixed to APAP or APAP to fixed



# Module IV: Summary – Key Elements for CPAP Success and Adherence

## ○ Preparation:

- Education and encouragement before treatment
- Mask fit and equipment instruction – before treatment
- Identification of potential issues – (e.g. fear, reluctance, claustrophobia, allergic rhinitis)
- Case management enhances patient perception of support and facilitates coordination between the players.

## ○ First week of treatment:

- Crucial to identify problems early, trouble-shoot and support the patient
- Multidisciplinary approach
- Given the impact on long-term success, it is worth the effort!

## ○ Follow-up:

- Periodically re-assess the patient's response to treatment.
- Identify equipment issues.
- Provide chronic disease management, including:
  - ✓ Case management
  - ✓ Digital monitoring tools (i.e. DROWZLE App)



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