

The Toolbox for Improving Adherence to NIPPV in Sleep Disorders

Al Heuer, PhD, MBA, RRT, RPFT, FAARC
Professor, Rutgers University
Co-Owner, A & T Lectures



Learning Objectives

- Review statistics related to Positive Airway Pressure (PAP) and Obstructive Sleep Apnea (OSA)
- Discuss ways to monitor adherence to PAP
- Evaluate Barriers to Adherence to PAP
- Describe strategies which promote successful adherence to PAP
- Provide additional related resources



Studies show that patients having OSA typically go undiagnosed for up to 10 years with steadily increased use of healthcare resources

- **Co-morbidities associated with OSAS:**
 - **Diabetes**
 - **Hypertension**
 - **Heart Disease**
 - **Stroke**



CPAP TREATMENT FOR OSA

- **OSA** occurs in an estimated 5% of the adult population.
- **CPAP** is a first line treatment for **moderate to severe OSA**.
- CPAP is almost **100% effective** when used regularly but **adherence is a challenge**.
- The provision of CPAP involves **more than simply selling a CPAP device and mask**: it involves:
 - education
 - monitoring,
 - support
- This is often a shared responsibility among
 - the **patient**
 - the **sleep physician**
 - the **sleep clinic**
 - **Equipment provider**



CPAP adherence

- **Adherence** refers to the degree that an individual follows a recommended illness-related recommendations
- **Adherence failure :**
 - use of CPAP for less than **4 h / night on 70% of nights**
 - **And/or lack of symptomatic improvement.**
- **5-50%** of OSA patients **reject CPAP within the first week .**
- **12 to 25%** of the remaining patients often **discontinue its use at 3 years**



Benefits of CPAP adherence

- **CPAP:**
 - reduces **daytime sleepiness, depression, cardiovascular morbidity/mortality, accidents**
 - improves some measures of **cognitive performance** and improves perceptions of **quality of life,**
- **Reduces healthcare utilization**
- **Adherence to CPAP treatment is the largest factor impacting on the effectiveness of OSA treatment**



The basic requirements are:

- **Staff** who are appropriately trained
- A choice of **CPAP equipment** which meet individual patient needs
- **A CPAP initiation service** which provides patients with **adequate information**, education and follow-up.
- An infrastructure that enables **timely and efficient communication with sleep clinics and referring doctors** about their patients



Assessment of CPAP adherence

- To assess CPAP adherence and treatment efficacy, CPAP manufacturers have implemented **tracking systems** that monitor CPAP efficacy
 - residual sleep-disordered breathing
 - hours of CPAP use
 - mask leak
- **CPAP adherence tracking now is a requirement for Medicare and other payers to continue reimbursement for CPAP.**



There are several different **methods to transmit CPAP adherence tracking data**

- Most systems use cards (**smart card-SD cards**), **memory sticks**, **download cable** or **wireless transmission**.
- CPAP adherence profiles are not standardized between the **different proprietary tracking systems** and the reports are not yet easily exportable to electronic medical records.



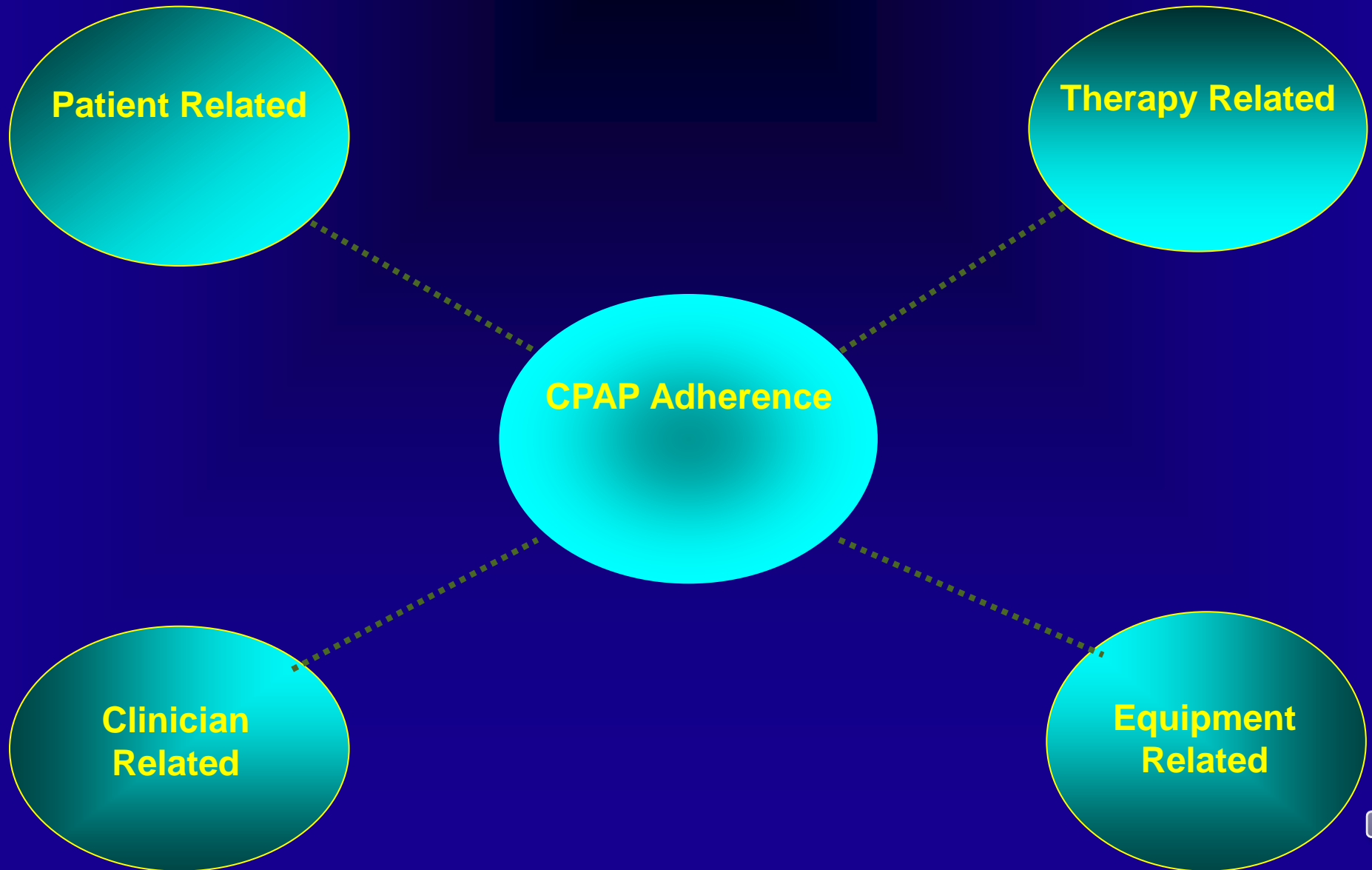
- This USB **Smart Stick Memory Card** is designed for use with Fisher & Paykel CPAP Machines.
- The Smart Stick works as a miniature USB drive capable of transferring therapy data from a Smart Stick without the need for a separate card reader.
- To review data on the card software, like Fisher & Paykel's ,Performance Maximizer Software, is required.



Barriers to CPAP Adherence



Barriers to CPAP Adherence



Equipment Related Barriers

- Complexity of therapy/device
- Excessive mask leak
- Portability/Battery backup
- Device noise
- Hose length
- Improper mask fit



 Med Equipment Direct.com



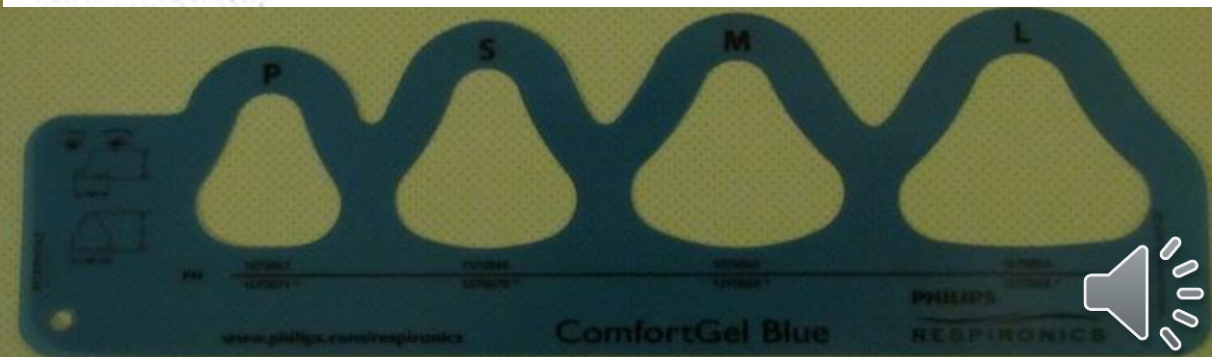
Older
Pre-2007



2007-08
'M' Series



2009-11
PR System One



Therapy Related Barriers

- **Adverse reactions that go unaddressed**
 - Nasal dryness or dry eyes
 - Nasal congestion
 - Skin irritation
 - Bloody nose
- **Expense of therapy**
- **Governmental policies (reimbursement, licenses of clinicians and drivers)**
- **Adherence decreases over time**



Nasal pillow



Nasal mask



Full face mask



Total face mask



Patient Related Barriers

- Health literacy
- Ambivalence
- Lack of family or other social support.
- Patient economics
- Lack of reimbursement
- Psychological variables - claustrophobia
- Physical limitations
- Less severe factors/Little or no perceived benefit from therapy
- Use of prescription/non-prescriptions drugs or alcohol



Claustrophobia

- **Claustrophobia** is a form of specific phobia that entails extreme anxiety and panic elicited by closed spaces.
- **Almost one-third of sleep apnea patients endorse CPAP-related claustrophobia** and may lead to non-compliance.
- CPAP-related claustrophobia was perceived as **one of the largest deterrents to CPAP therapy.**



Clinician Related Barriers

- **Poor patient relationship**
- **Lack of clinician follow-up**
- **Expression of doubt** concerning therapeutic potential or creating falsely elevated expectations
- **Unwillingness/inability** of clinician to educate patient
- **Lack of knowledge** on patient's medical history, and other medication the patient may be taking

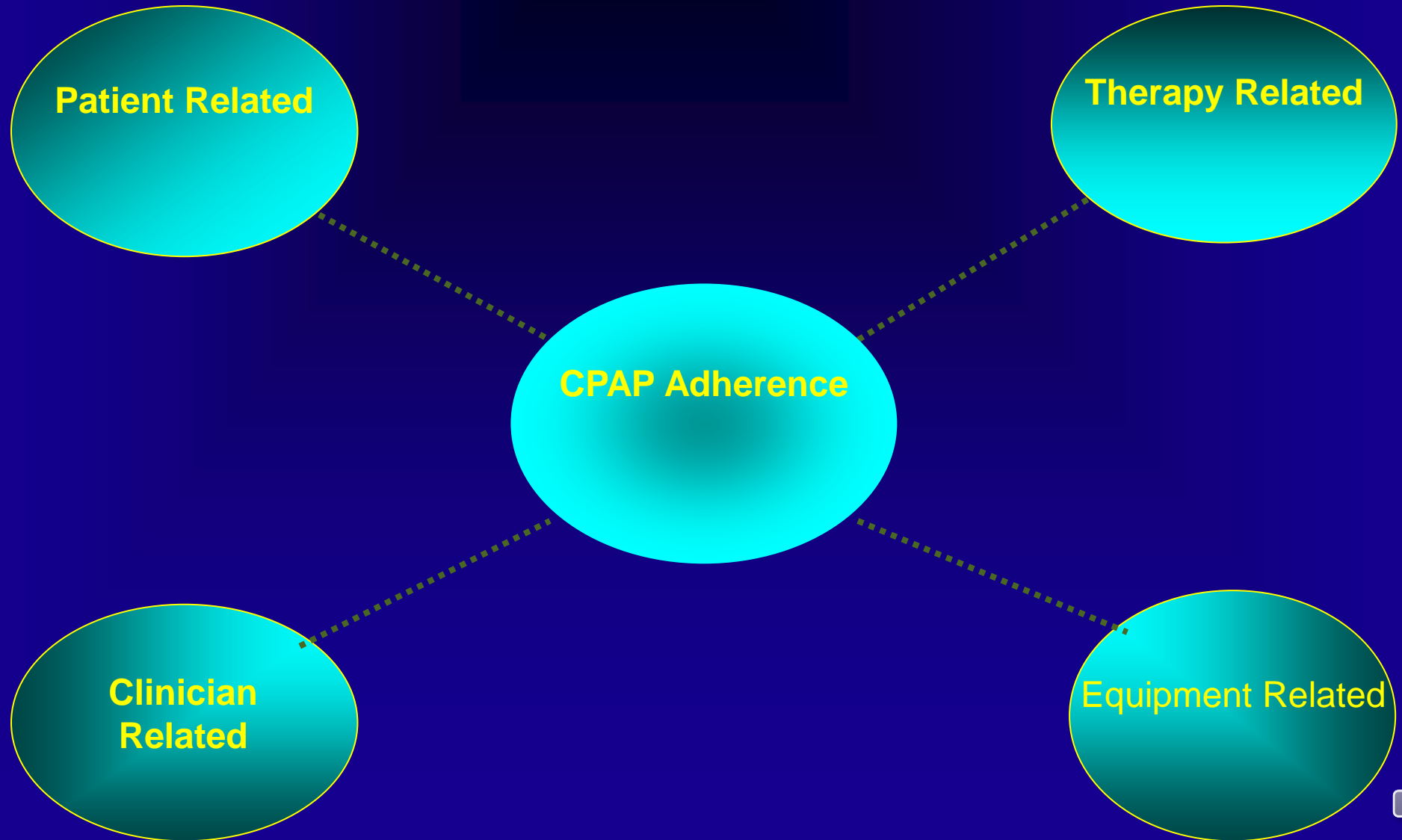


The Barrier No One Wants to Talk About - \$ Reimbursement

- Reimbursement from CMS and Private Insurance is a Troubling Barrier.
- Reimbursement for CPAP/BiPAP and other respiratory interventions has been cut dramatically over the past 20 years.
- Such reductions leave fewer resources for
 - Proper equipment
 - Patient education
 - ***Patient follow-up, to address compliance challenges.***
-

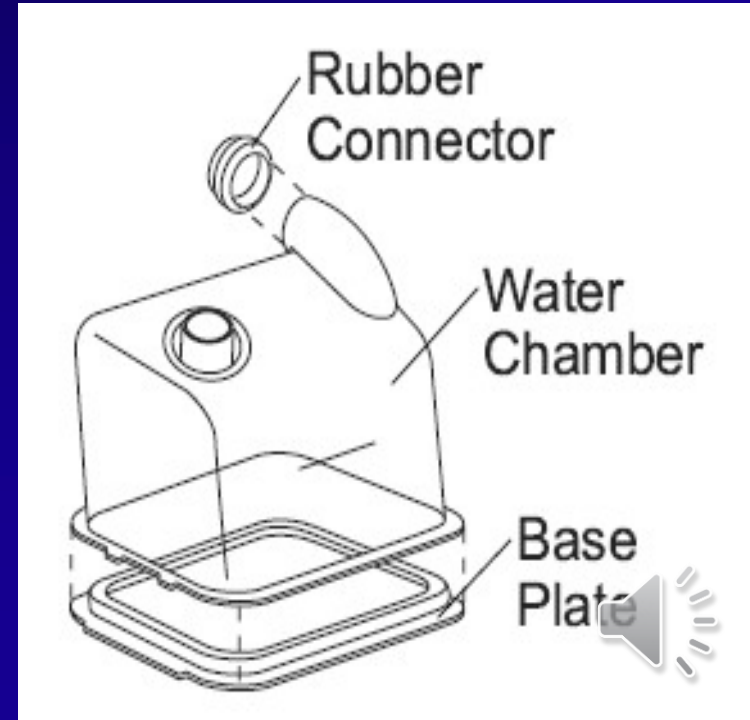


Intervention



Equipment/Therapy Interventions

- **Heated humidification** to relieve nasal dryness, running nose, nose bleeds
- **Nasal spray**
- **CPAP modalities:** auto-titrating or bilevel PAP
- **Refit interface**
- **Change mask type**
- **Comfort features**
 - Ramp
 - Quieter blower
 - Battery backup
 - Expiratory pressure relief



The Contour CPAP Pillow works with all major brands of CPAP masks!



The Contour CPAP Pillow Improves:

- **CPAP Ease of use**
- **Sleep Comfort for all CPAP users**
- **CPAP Compliance -**
- **Neck support and spine alignment**
- **Airway alignment**

The Contour CPAP Pillow Reduces:

- **Mask leaks**
- **Pressure on mask and face**
- **Mask discomfort**



Patient/Clinician Intervention

- Family/social support
- Bed partner's acceptance
- Suitable education and training on equipment
- Cognitive behavioral therapy, motivational enhancement therapy
- Rapid response to difficulties



Compliance Program

- ***“Patient education, close follow-up and intervention appear to improve long-term tolerance.”***
- **Education**
 - 1-Disease state**
 - What is their diagnosis
 - How severe is their OSA
 - How will it impact their lives
 - What are the potential co-morbidities
 - What should they expect
 - 2-Equipment**
 - How it works
 - How to inspect and replace when required
 - What support is available to ensure the patients success in therapy.



Initiation of CPAP treatment should also include **general advice** on lifestyle and medical issues

- Patients who **smoke** should be advised to stop.
- **Alcohol** should be avoided.
- Avoided nocturnal **sedatives or sleeping tablets**.
- Advice regarding **body weight** and its interaction with OSA should be provided if appropriate.
- Patients should be informed about the impact of **sleeping position** on sleep apnea severity.



Ongoing Management of CPAP Usage:

- It is suggested that approximately **7, 30, 60 days** and approximately **12 months** after treatment initiation are appropriate times.
- At this time the provider should
 - 1- Determine the **patient's usage from the meter of the CPAP device** and calculate the average daily hours of CPAP usage.
 - 2- **Check the device and humidifier** for satisfactory operation.
 - 3- **Check filters, mask and head-gear** for satisfactory condition and advise the patient of any faults and suggested remedial actions.



Exposure therapy for claustrophobic reactions to CPAP

- If an alternative, less confining interface such as nasal pillows are not effective, then *Exposure Therapy* may be considered.
- Claustrophobia is composed of two “core” fears: **fear of restriction**, and **fear of suffocation**.
- ***Exposure therapy*** is indicated for individuals with sleep apnea who are unable to tolerate CPAP devices due to **anxiety reactions**.
- **CONTRAINDICATIONS** :unstable psychiatric symptoms, inability to maintain a therapeutic relationship.



RATIONALE FOR INTERVENTION

- The phobic individual **confronts the feared object or situation** either imaginably or in real life (in vivo).
- The individual is supported in experiencing these feared situations in a **gradual manner**, and **over time the anxiety decreases**.
- The effectiveness of exposure therapy stems from **learning to tolerate and manage anxiety without the need to escape** or avoid the phobic stimulus,
- Exposure therapy **increases the individual's perception of control over fear**



Patient handout describing exposure steps for home practice.

- Do not try wearing CPAP during sleep until you are comfortable with it during the daytime.
 - If your machine has a **RAMP button**, you may use this function to keep the pressure at a low level during practices.
- 1-Turn the CPAP airflow ON. **Hold mask over your nose**, and practice breathing with machine on while awake. While you are doing this, keep your mouth closed and breathe regularly through your nose. Start with short periods of time (**1–5 min**) and **gradually build up to longer periods of time**.
 2. Turn the CPAP airflow ON and wear the **mask over your nose with the straps on your head**. Practice breathing with CPAP on while awake. **Wear CPAP for longer periods of time until you can have it on for 15–20 min comfortably**.
 3. Take a **nap during the day with CPAP machine and mask on**. It is not important whether you fall asleep or not – the goal is to rest comfortably in your bed with the CPAP on.
 4. **Wear CPAP at night when you go to sleep**. If you experience claustrophobia or uncomfortable feelings, go to previous step until comfortable. Then proceed to next step.



Dr. Heuer's Variation of a Compliance Enhancement Plan

- Ensure that all barriers discussed above are minimized.
 - Proper interface
 - Humidification
 - Ramp and Auto-titrating
 - Proper education and follow up
- Ask patient to try the PAP for 5 minutes on first night
- Ask them to gradually increase to 10 mins on second night, 15 minutes on third night, etc.
- One homecare company found that 77% of the patients were compliant by 5th night, versus less than 50%



Take Home Points

- Untreated OSA has serious consequences to the individual patient. Those around them and society.
- Given the nature of PAP involving blowing air at over 100 LPM into the patients face/airway, it's no surprise that many barriers exist.
- However, there are strategies which can off-set many of the barriers and enhance compliance.
 - CMS \$ Reimbursement will continue to be a challenge
- However, overcoming these barriers requires careful planning and commitment to success by multiple stakeholders, including the patients and clinicians who serve them.



Selected References

- ▣ Principles of Polysomnography: Spriggs, ed 8, 2021.
- ▣ Egan's Fundamental of Respiratory Care: Stoller, Heuer, et al, ed 13, 2024.
- ▣ Clinical Assessment in Respiratory Care, ed. 9, Heuer, 2023.
- ▣ AARC.org
- ▣ Pubmed
- ▣ Medline

