ISD

ISLAND SLEEP DIAGNOSTICS

INTERNATIONAL DISTRIBUTOR

PHILIPS RESPIRONICS

Moving Trinidad Healthcare Forward in 2014

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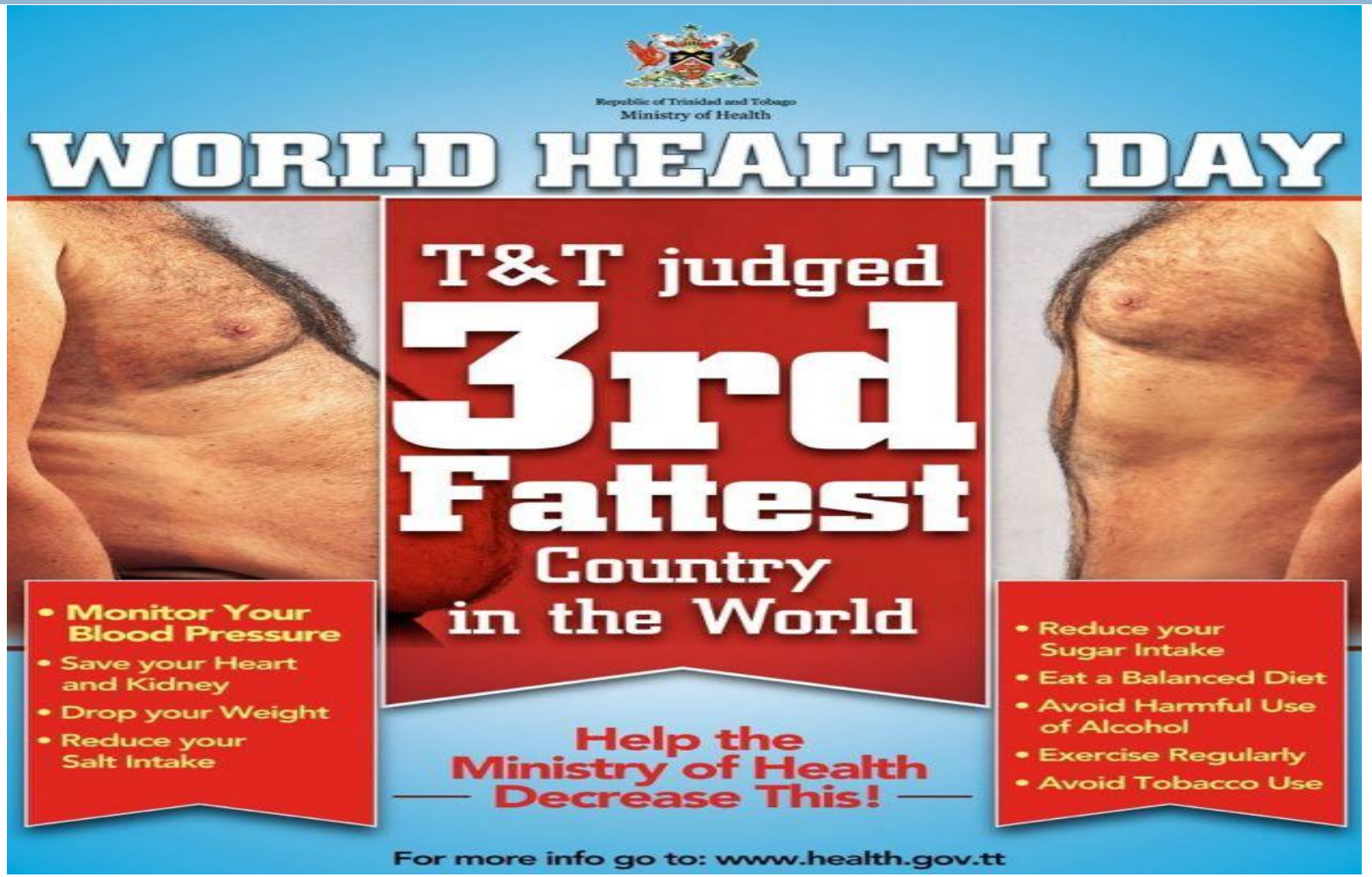
Date: December 9th 2013

Who is Gregory Arneaud and Rod Amar?

Why Trinidad?

- Ranked #2 in the world in diabetes related deaths and # 3 in obesity!
- Lack of education, awareness, and limited medical resources for sleep disorders management.
- No Board Certified Sleep Professionals in the Caribbean.
- According to the Center for Disease Control 70 % of all Type 2 diabetics suffer from sleep apnea and the severity directly impacts diabetes symptoms and the ability to control glucose.

What's Wrong with this Picture?



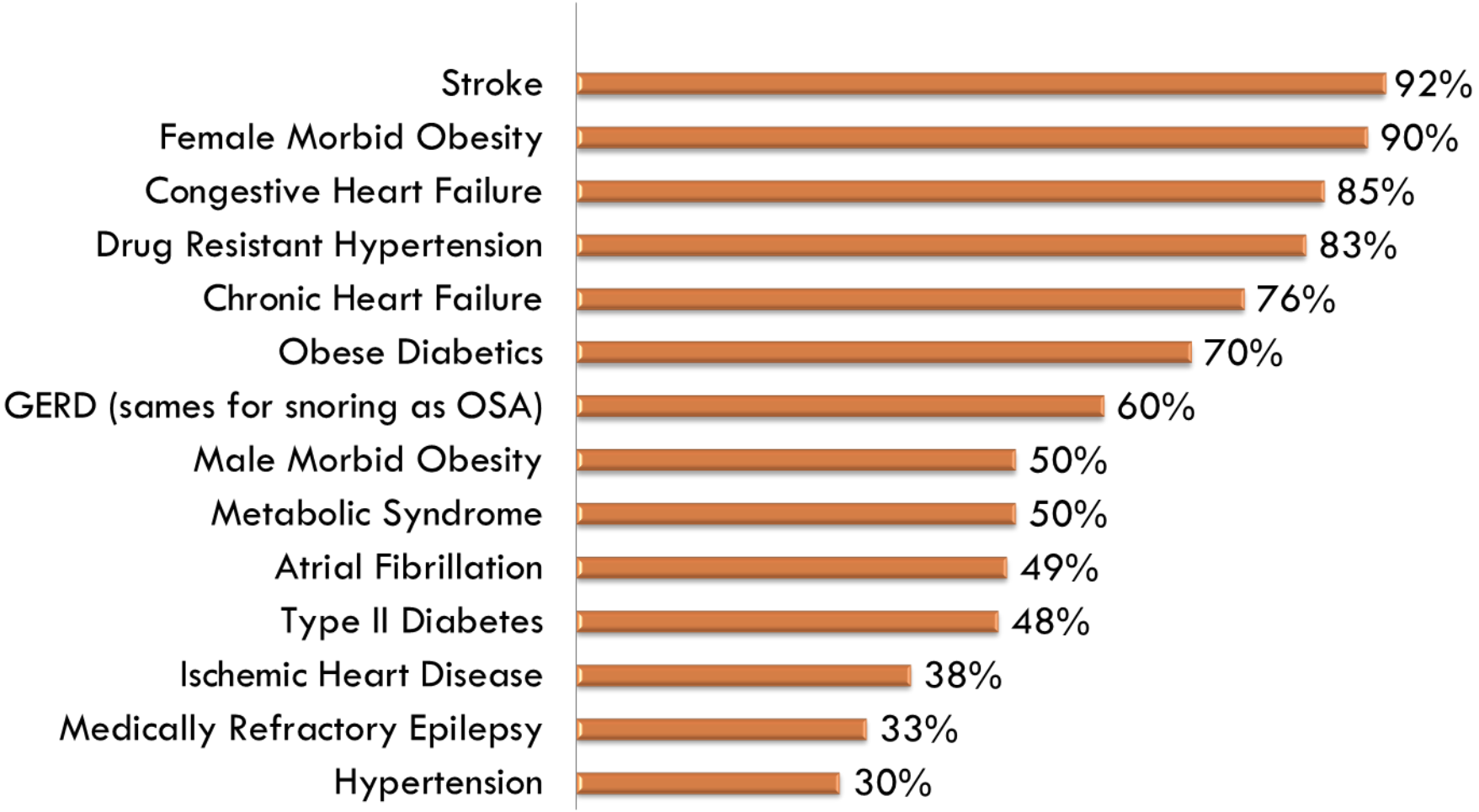
Sleep Apnea is Directly Related to Obesity

2011 Trinidad Health Report Card

LEADING HEALTH ISSUES AFFECTING DIFFERENT AGE GROUPS

TARGET GROUP	AGE	LEADING CAUSE OF MORBIDITY
Infants	Under 1 year	Infectious and parasitic diseases and acute respiratory infections
Pre-school children	1 - Under 5 years	Infectious and parasitic diseases and acute respiratory infections
School –age children	5 - 14 years	External causes (injuries)
Young Adults	15 - 24 yrs	External causes (injuries)
Adults	25 - 44 yrs	External causes (injuries)
Older Adults	45 - 64	Diseases of the heart
Elderly	65+	Diseases of the heart

Prevalence of Sleep Disorder in Trinidad Among Medical Conditions



compiled by Dr. Michael Simmons

Global Epidemic of Sleep Disorders

How does it impact health and workplace safety?

- Sleep Apnea profoundly affects a person's life and performance (work and school) and contributes to over 100,000 motor vehicle accidents per year.
- Prolonged sleep apnea can cause a sharp rise in blood pressure & may lead to cardiac arrest.
- Over time, apneic episodes can cause cardiac arrhythmias, pulmonary hypertension, and subsequent left-sided heart failure, if addition to other health issues.
- The FAA and DOT have recently made it mandatory that pilots and drivers be examined for OSA.

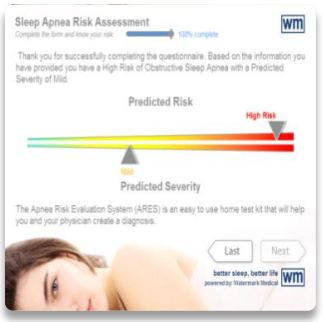
Signs & Symptoms of Sleep Disorders

- Snoring
- Obesity/Overweight
- Diabetes
- High Blood Pressure
- Morning Headaches
- Memory & Learning Difficulties
- Cardiovascular Disease
- Sexual Dysfunction
- Daytime Sleepiness
- Depression/Anxiety
- Frequent Night Time Urination
- Falling Asleep While Driving

Sleep Disease Management

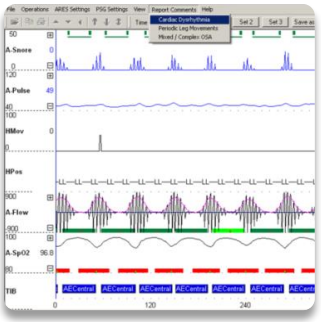
End to End Occupational Wellness Program

Ensuring a successful outcome and a positive experience



Screen

Test



Diagnose

Treat

Sleep Coach

Remember: Undiagnosed OSA is as Serious as a Heart Attack….ISD's Fatigue Management Risk Program will help improve employee overall health and wellness while decreasing risk of workplace safety incidents.

Diagnosis Process in Trinidad

PSG(Sleep Lab)

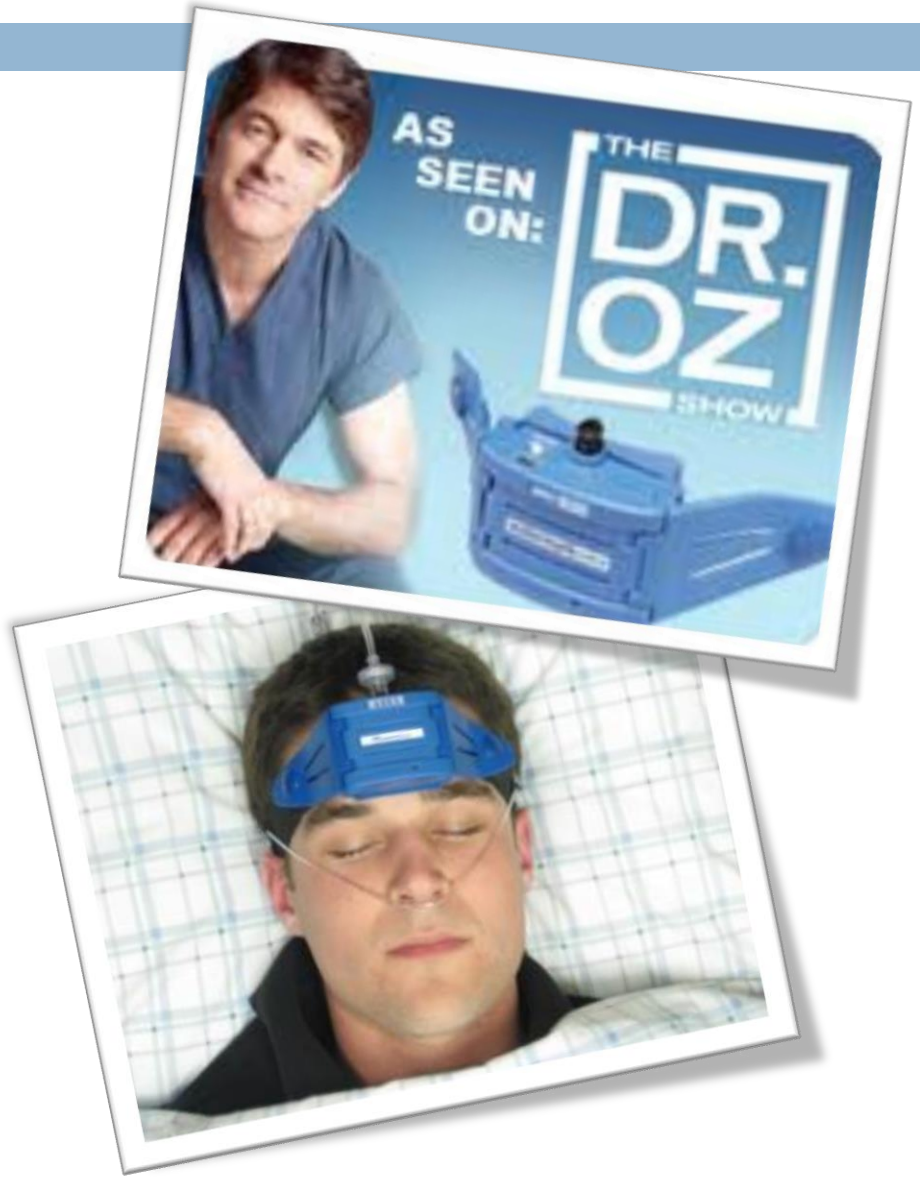
- Eleven Channels +
- Wired leads- Invasive Testing
- Outside Natural Sleeping Environment (Increased False/Positive Reporting)
- Increased Anxiety
- Minimal Sleep Data Analyzed
- Two Step Diagnosis Process
- Diagnosis / Manual CPAP Titration
- Offered Fixed CPAP Therapy (Requires Annual Re-Titration)
- No Board Certified Sleep Physician Interpretation

ISD (Home Sleep Test)

- Ten Channels
- Wireless FDA Approved Technology (Non-Invasive Testing)
- Tested in Natural Sleeping Environment
- More Accurate Sleeping Habits Monitored
- Two Night Sleep Evaluation (Twice as Much Data Analyzed)
- APAP Therapy Provides Increased Compliance- No Further Titrations
- Patient Preferred & Physician Approved
- Board Certified Sleep Physician Interpretation (AASM)

ISD Home Sleep Test

- FDA approved innovative technology to diagnose OSA
- Patient information stored and transferred to the U.S. for interpretation by an American Academy of Sleep Medicine (AASM) board certified sleep physician
- Sleep test results provided within 48 hours with any recommended treatment considerations



Reading ISD Sleep Study Results

ARES Sleep Study Report

Patient Name	John Doe	**Study Ordered by**	
Date of Night 1	07/15/2013	**Date of Birth**	
Date of Night 2	07/17/2013	**Identification Number**	

Overall AHI	Overall RDI	% time < 90% SpO2	Mean SpO2	% time snoring > 30 dB
84	87	31.2 %	91.1 %	37.7 %

PHYSICIAN INTERPRETATION AND COMMENTS: Findings are consistent with very severe, non-positional obstructive sleep apnea (OSA); associated with severe desaturations.

CLINICAL HISTORY: 50 year old male presented with: 19.5 inch neck, BMI of 42, an Epworth sleepiness score of 11, history of hypertension and symptoms of nocturnal snoring, waking up choking and witnessed apneas. Based on the clinical history, the patient has a high pre-test probability of having severe OSA.

SLEEP STUDY FINDINGS: Patient underwent a two night Home Sleep Test and by behavioral criteria, slept for approximately 11.6 hours, with a sleep latency of 3 minutes and a sleep efficiency of 92%. Very severe sleep disordered breathing (AHI=84) is noted based on a 4% hypopnea desaturation criteria. The patient slept supine 78.2% of the night based on valid sleep time of 11.6 hours. The apneas/hypopneas are accompanied by severe oxygen desaturation (percent time below 90% SpO2: 31.2%, Min SpO2: 50.1%). The average desaturation across all sleep disordered breathing events is 9.2%. **Snoring** occurs for 37.7% (30 dB) of the study, 23.9% is very loud. The mean pulse rate is 69 BPM, with very frequent pulse rate variability (81 events with >= 6 BPM increase/decrease per hour).

TREATMENT CONSIDERATIONS: Consider nasal continuous positive airway pressure (CPAP/AutoPAP) as the initial treatment choice for very severe obstructive sleep apnea. If the patient chooses CPAP therapy, an attended PAP titration can be performed; or an Auto-titrating PAP can be prescribed with pressure range 5-20 cmH20 with download is also an option. If the auto-PAP download does not show adequate treatment of respiratory events, and in lab titration should be considered. Consider follow up overnight pulse oximetry test with Auto-PAP using high resolution pulse oximetry. If the patient fails CPAP therapy, begin supplemental oxygen. A mandibular advancement splint (MAS) or referral to an ENT surgeon for modification to the airway should be considered to reduce the risk of mortality caused by very severe OSA if the patient prefers an alternative therapy or the CPAP trial is unsuccessful. Weight loss may be of benefit in helping reduce the severity of respiratory events and snoring.

DISEASE MANAGEMENT CONSIDERATIONS: Routine follow up efficacy testing should be performed when non-CPAP therapies are prescribed.

Electronically signed by:

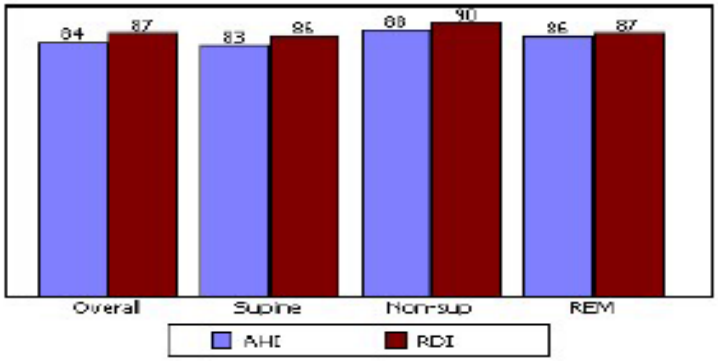
Signature: 

Date: 07-22-2013 04:51:47 EST

ARES SAMPLE REPORT

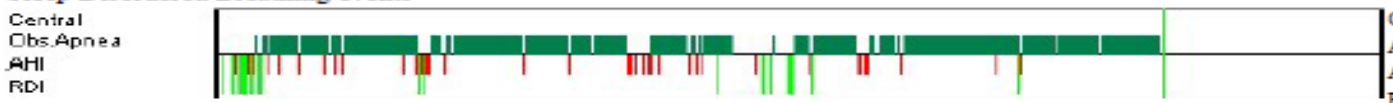
ARES Sleep Study Report

Patient Name			
Age	50	Gender	Male
Height (in)	64	BMI	42
Weight (lbs)	243	Neck Size (in)	19.5
OSA Risk	High Risk	Pred. Severity	Severe
HBP	Yes	Heart Disease	No
Diabetes	No	Depression	No
Stroke	No	Epworth	11
Snoring Frequency			Almost always
Gasping or Choking			Sometimes
Observed to stop breathing during sleep			Sometimes



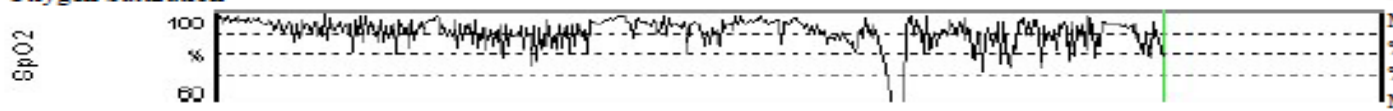
Study Date: 07/15/2013

Sleep Disordered Breathing events



Cnt Index	0
ApI	83
AHI	89
RDI	94

Oxygen Saturation



Mean	91.2
Min	68.7
% <90%	31.9
% <85%	12.1
Mean dip	9.1

Head Position

Supine	
Time(hr)	4.2
% time	71.2
Sup-NS Ratio	1

Awake / Sleep by actigraphy

Time(hr)	
Record	6.5
Sleep	6
% Eff.	91.3
% REM	1.7

Sample Study Findings

- Patient underwent a one night Home Sleep Test and by behavioral criteria, slept for approximately 6.1 hours, with a sleep latency of 9 minutes and a sleep efficiency of 87.4%. Severe sleep disordered breathing (AHI=33) is noted based on a 4% hypopnea desaturation criteria. The patient slept supine 20.7% of the night based on a valid sleep time of 6.1 hours and is 1.6 times as likely to have apneas/hypopneas when supine. When considering more subtle measures of sleep disordered breathing, the overall respiratory disturbance index is also severe (RDI)= 50 based on a 1% hypopnea desaturation criteria with confirmation by surrogate arousal indicators. The apneas/hypopneas are accompanied by minimal oxygen desaturation (percent time below 90% SpO2; 1.3%, Min SpO2: 81.3%). The average desaturation across all sleep disordered breathing events is 4.1%. Snoring occurs for 39.0% (30dB) of the study, 38.5% is extremely loud. The mean pulse rate is 68 BPM, with very frequent pulse rate variability (74 events with >= 6 BPM increase/decrease per hour.

Sample Study Treatment Options

- **TREATMENT CONSIDERATIONS:** Consider nasal continuous positive airway pressure (CPAP/AutoPAP) as a treatment
- option based on the RDI severity and co-morbidities. If the patient chooses CPAP therapy, an attended PAP titration can be
- performed; or an Auto-titrating CPAP can be prescribed with pressure range 5-20 cmH20 with download is also an option. A
- mandibular advancement splint (MAS) or referral to an ENT surgeon for modification to the airway should be considered to
- reduce the potential contribution of OSA on existing diseases if the patient prefers an alternative therapy or the CPAP trial is
- unsuccessful. Weight loss may be of benefit in helping reduce the severity of respiratory events and snoring.

Sleep Apnea Treatment Options

- Continuous Positive Airway Pressure (CPAP)
- Oral appliances (fitted by dentist)
- Positional therapy
- Surgery (many different procedures)
- Weight Loss (Good luck!)

POSITIVE AIRWAY PRESSURE THERAPY

- Innovative auto-titration PAP system with heated humidification
- Nasal interface fitting to include nasal pillows, nasal & full face masks
- Follow-up compliance program
- Set-up and training provided by ISD technician

Medicare Guidelines for PAP Therapy

- Treatment is recommended for all patients diagnosed with moderate and severe obstructive sleep apnea syndrome i.e. (AHI/RDI>15). This means any patient with a AHI or RDI greater than 15 events per hour.

- Treatment is recommended for all patients diagnosed with mild obstructive sleep apnea syndrome i.e. (AHI/RDI 5-15), if associated with any one of the following: excessive daytime sleepiness(Epworth Sleepiness Score of 10 or more), cognitive dysfunction, mood disorders, hypertension, heart disease, stroke and difficulty initiating or maintaining sleep.

- Untreated obstructive sleep apnea is associated with hypertension, heart disease, stroke, daytime sleepiness, cognitive dysfunction, mood disorders and sudden death.

Compliance Criteria

- Patient has undergone ISD's(2-Nights Sleep Evaluation w/ Board Certified Sleep Physicians Interpretation) with either of the following criteria:
- *a. AHI/RDI is ≥ 15 events per hour with minimum of 30 events; or,*
- *b. AHI/RDI is ≥ 5 and ≤ 14 events per hour with minimum of* 10 events and documentation of excessive daytime sleepiness, impaired cognition, mood disorders, insomnia, hypertension, ischemic heart disease or history of stroke.
- Apnea Hypopnea Index (AHI)
- The AHI is the number of **apneas or hypopneas** recorded during the study per hour of sleep. It is generally expressed as the number of events per hour. Based on the AHI, the severity of OSA is classified as follows:

Healthcare Providers

- Guardian Life
- Sagicor
- TATIL
- UniMed
- Petrotin
- Maritime
- Beacon
- Pan-American Life
- Cardia-Health
- Algico

Questions?