60th Annual NMAFP Family Medicine Seminar
July 27-30
Ruidoso, NM

- **The Seven Lies Your Mother and Doctor Told You To Believe About Sleep**
- **July 30th, 2017**
- **Frank M. Ralls M.D.**
- **Associate Professor**
- **Family Medicine, Sleep Medicine, Geriatric Medicine**
- Program Director:
- University of New Mexico Sleep Medicine Fellowship

Conflict of Interest & Disclosures for Speakers

✓ 1. I do not have any relationships with any entities **producing**, **marketing, re-selling, or distributing** health care goods or services consumed by, or used on patients.

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Type of Potential Conflict	Details of Potential Conflict
Grant/Research Support	**NONE**
Consultant	
Speakers' Bureaus	
Financial support	
Other	Any remaining typos in this presentation are the responsibility of the editor

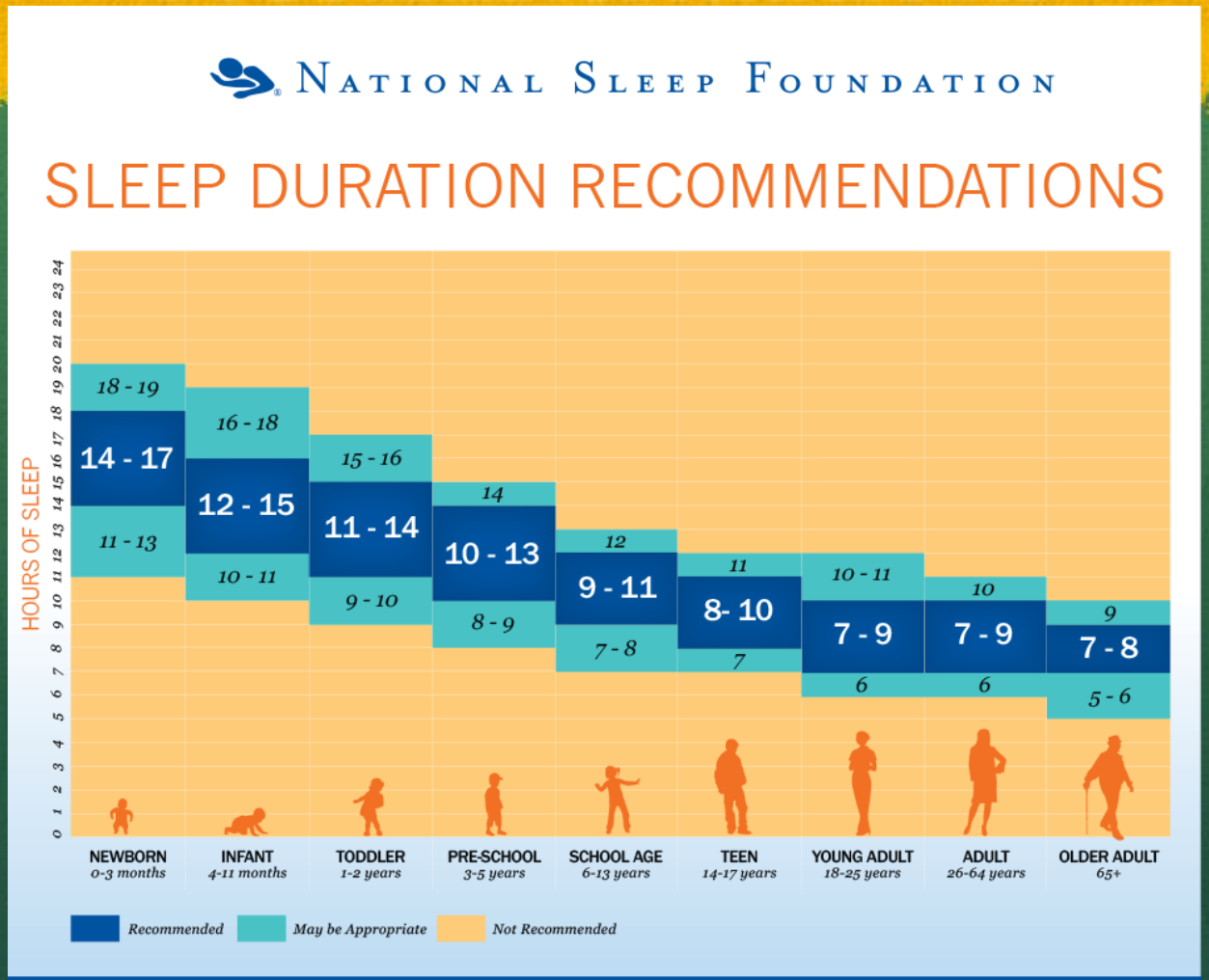
Down the Rabbit Hole of Medical Misinformation

- Learn to distinguish sleep facts from sleep lies regarding:
  - Sleep needs
  - Insomnia
  - Sleep Apnea diagnosis and treatment
  - CPAP use
  - REM sleep

Lie #1

- You MUST get 8 consecutive hours of sleep at night

The experts make recommendations

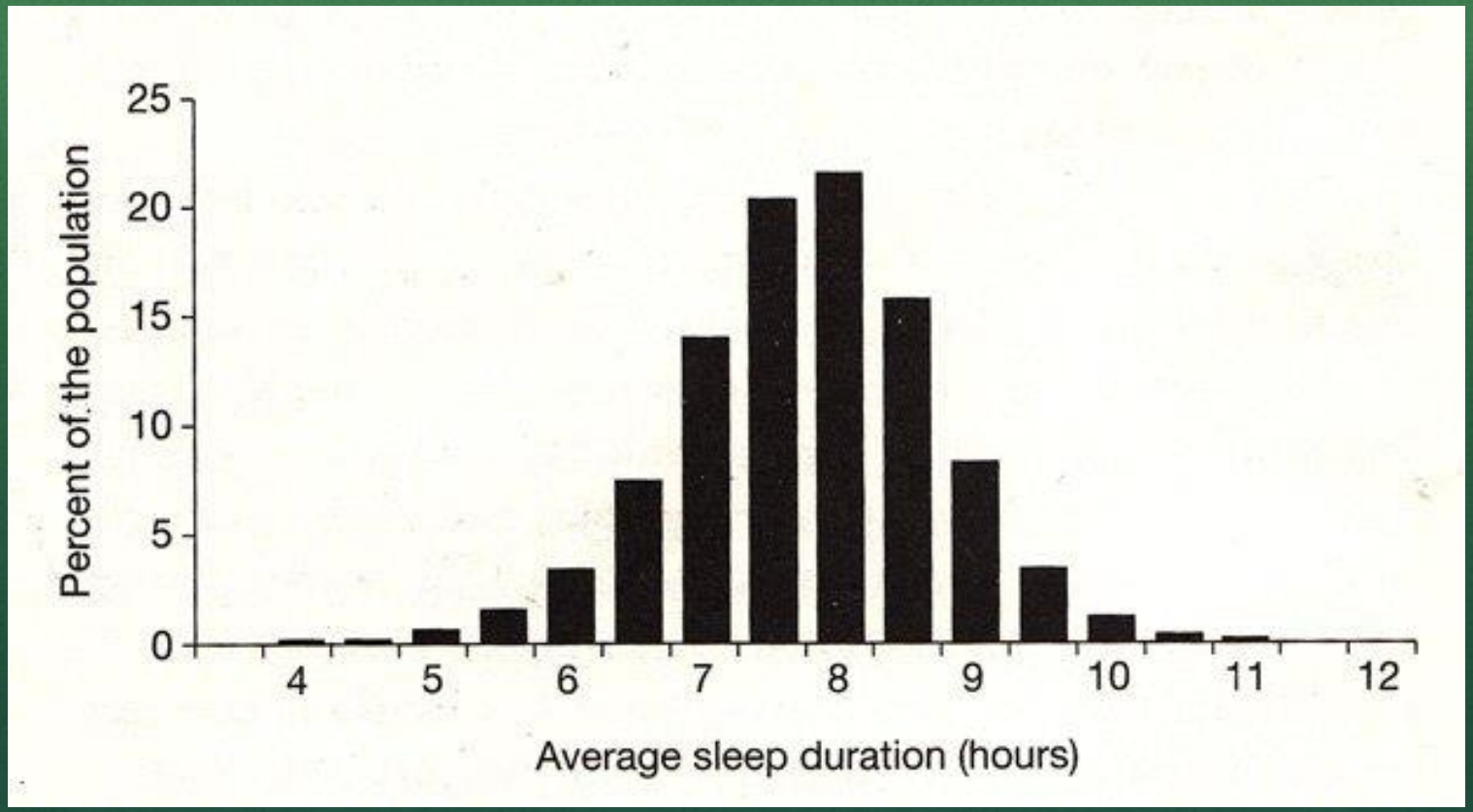


Hirshkowitz M, The National Sleep Foundation's sleep time duration recommendations: methodology and results summary, Sleep Health (2015), http://dx.doi.org/10.1016/j.sleh.2014.12.010

However…….
(The Role of Genetics)

- Your sleep need is genetically determined
- Our master circadian clock is found in the Suprachiasmatic Nucleus (SCN) of the hypothalamus
- CLOCK genes (Circadian Locomotor Output Cycles Kaput)
- Normal Variants
  - Long sleepers
  - Short sleepers

So not everyone needs the standard “8 hours”



Do you need 8 hours of sleep?

- You DO NEED to get your genetically determined amount of sleep
  - Individuals do better or less well with sleep deprivation – that is likely genetically determined also!
- KEY: As long as you WAKE UP FEELING GOOD, you're good
- NO MEDS NEEDED TO CHANGE GENETICS

But does it need to be consecutive?

- As long as the sleep need is met, it doesn't matter if all of it is consecutive
  - Can even add naps if they don't impact your ability to fall asleep at night.
- "But doctor, I wake up every night between 2 & 3 a.m. and it takes me an hour to fall back to sleep".

Does The Sleep Need to be Consecutive?

The "Second Sleep"

Documented back to the 15th century:

- 1st sleep starting about 2hr after dusk
- Then 1-2 hours of wake (prayer, reading, sex, or out to visit neighbors)
- Followed by "second sleep" of about 4 hours

References to first and second sleep started to disappear during the late 17th century. Concept essentially disappeared by 1920s.

Early 1990s, experiment by Wehr:

- Group of people kept in darkness for 14 hr/day for a month.
- By the 4th wk subjects had settled into distinct sleeping pattern:
  - They slept first for four hours, then woke for one or two hours before falling into a second four-hour sleep.

Lie #2

- If you can't fall asleep when you want to, you have insomnia
- Lie #2.5 - If you can't sleep when you want, you need medication

Insomnia:

What it means VERSUS what patients think it means

DEFINITION OF INSOMNIA

Unable to fall asleep when a person has a chance to do so

Must have negative symptoms:

Fatigue, low energy, mood disturbances

INCORRECT DEFINITION OF INSOMNIA

I CAN'T FALL ASLEEP WHEN I WANT TO

The "Normal" Circadian Rhythm

CIRCADIAN RHYTHM				
TYPICAL NORMAL				
8 P.M.	10 P.M.	4:30 AM		6:30
DARKNESS				LIGHT
MELATONIN	SLEEP	LOWEST BODY TEMPERATURE (NADIR)	2 HOURS	
				WAKE-UP

What if you get into bed at 10p but never fall asleep until 2a??

- ASK:
  - How long has this been true?
  - Usually starts in teenage years
  - If allowed to sleep on "preferred" schedule (say 2a-10a), they sleep just fine!!

Delayed Sleep Phase Disorder

The Role of Genetics

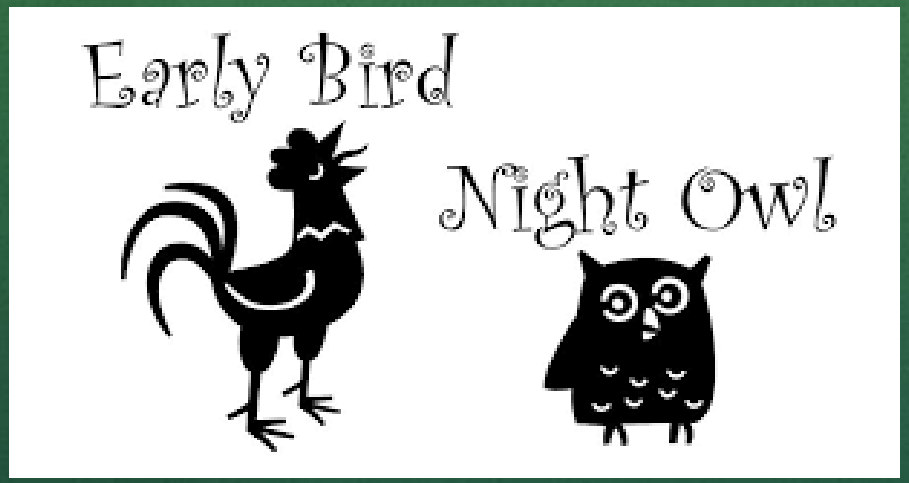
DELAYED SLEEP PHASE SYNDROME
Sleep onset commonly delayed 3 or more hours
Sleep medications are not effective
Sleep medications do not result in restful sleep

Delayed Sleep Phase Disorder

The Role of Genetics

CIRCADIAN RHYTHM					
DELAYED SLEEP PHASE SYNDROME					
8 PM		2 AM	8 AM		10 AM
DARKNESS					LIGHT
MELATONIN	CHOICE OR GENETICS	SLEEP	LOWEST BODY TEMPERATURE NADIR	2 HOURS	
					WAKE-UP

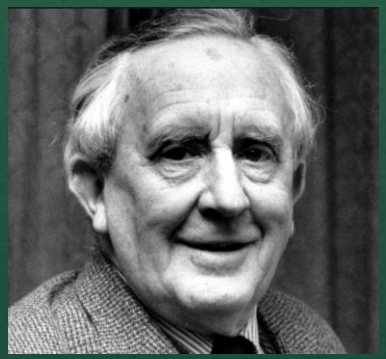
Circadian Rhythm *Disorders*



- The circadian rhythm is set genetically
- Only a "disorder" if it is causing a problem in their life
- You can try to override it but it is never perfect and has to be continuously addressed.
- They will likely be healthier and happier if they live in sync with their clock!
- They make GREAT swing- or night-shift workers!!

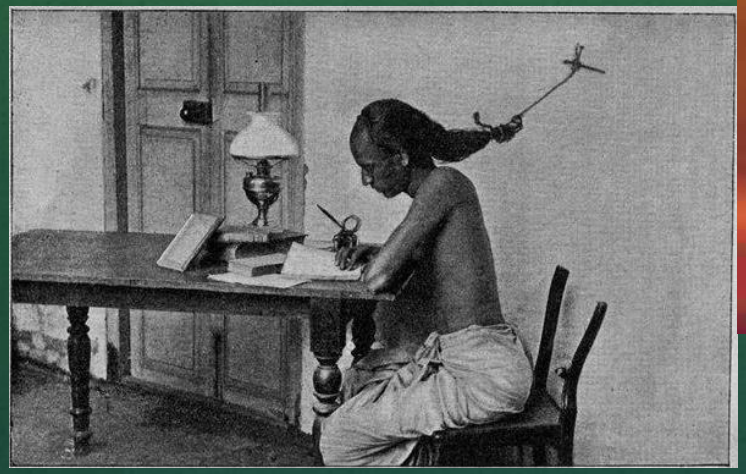
The Role of Genetics

What do all these people have in common?



I CAN'T SLEEP. I HAVE INSOMNIA

INSOMNIA BY CHOICE



I CAN'T SLEEP. I HAVE INSOMNIA

INSOMNIA BY CHOICE

Key Behaviors That Delay Sleep

Television, Blue light

Gaming

Power Drinks

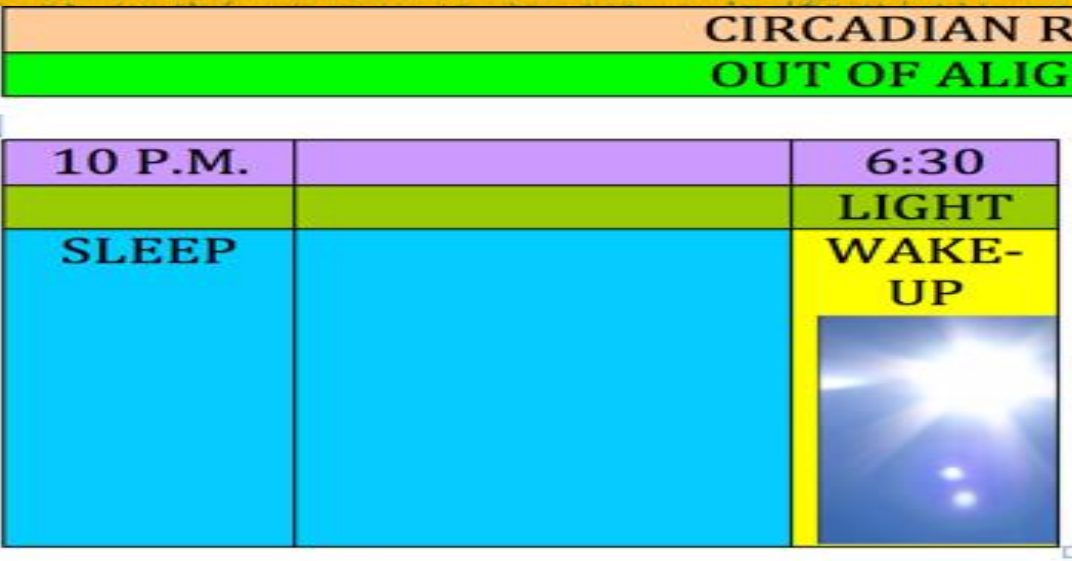
CHOICE

WHAT I'M DOING IS KEEPING ME UP

…AND I DON'T WANT TO STOP!!!

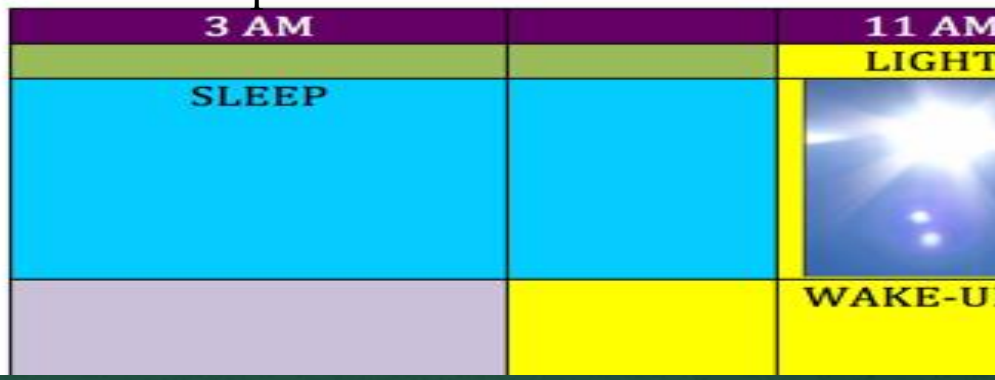
https://justgetflux.com

I CAN'T SLEEP. I HAVE INSOMNIA
INSOMNIA BY CHOICE



Circadian Genes in the Dopamine Pathway
Circadian Satisfaction Pathways Altered
Predisposes to Substance Use to Replace the "NORMAL"

Breast Cancer X 2 in Female Shift Workers



Phillips, Sci Rep, 2017; Pederson, J Sleep Res, 2017, Louie TT, Adiction Bio, 2017, Wegrzyn, Amer J Epidemiology 2017

Prescribing Medications For SELF INDUCED INSOMNIA

Sleep Med Epidemic

Why can we not say "NO"

"There are only four people in my life now, Paris, Prince, Blanket and you, Dr. Conrad"

- You have a duty to make me feel better
- Don't wish to have patients think badly of you
- Easier to say yes

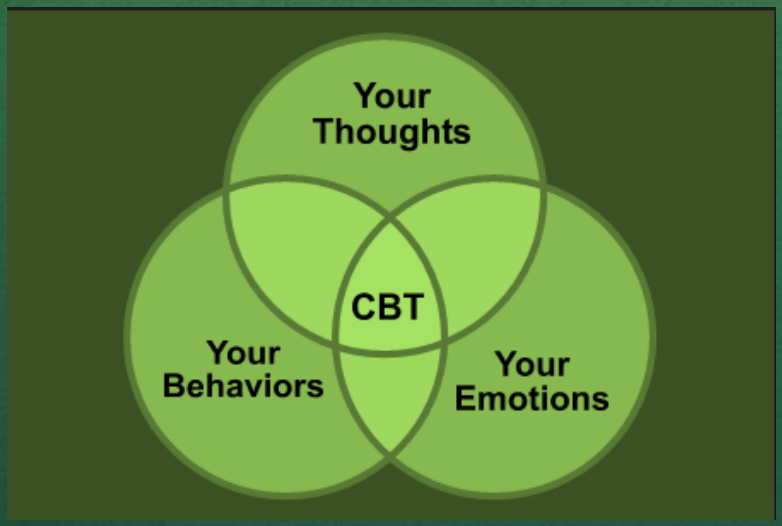
Prescribing Medications For SELF INDUCED INSOMNIA

- Sleep Med Epidemic
  - It's okay to say……"No"
  - Be assertive and courteous
  - Understand tactics i.e., manipulation
    - If you were a good doctor, you'd understand
  - It is not your responsibility to change patient's behaviors

Really think they have insomnia?

- The first line treatment for insomnia is not medication……..
  - **Cognitive Behavioral Therapy for Insomnia (CBTI) is the first line treatment.**
  - **CBTI: 20 minutes with a sleep psychologist or CBTI specialist: $120**
    - **Usually 4 – 6 sessions**
  - **On line course: $45**
  - **http://www.cbtforinsomnia.com**

Really think they have insomnia?



- Chronic Insomnia:
- CBT with a zolpidem taper
- 12 months: 44-73% remission
- 24 months: 42-63%
- CBT with zolpidem as needed (probably less effective)

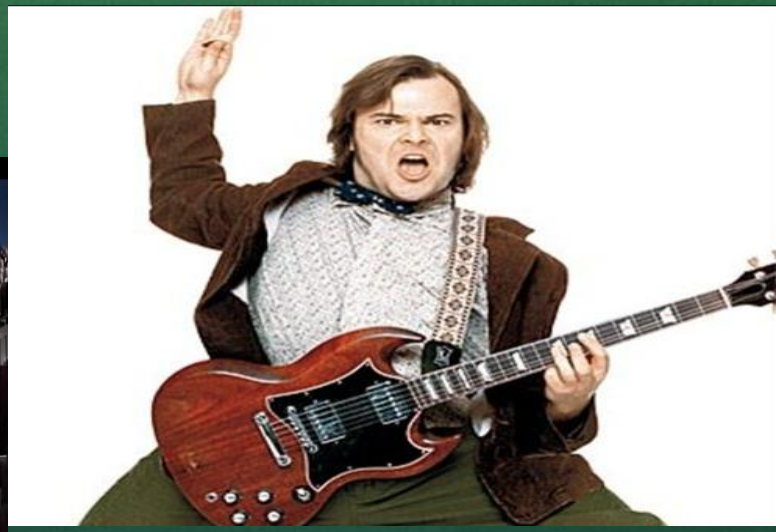
Miller, J Clin Sleep Med 2017; Bonneau, Sleep 2017 ; Ree, Sleep Med, 2017

Lie #3

- Using CPAP for sleep apnea will cure EVERYTHING

USING CPAP WILL MAKE ME A ROCK STAR

- **You will have a changed life!!!**
- **Make you beautiful**
- **Find you a boyfriend**



Chouard, Acta Otolarngy, 2017; Stevenson, Obs. Rev. 2017; Mokhber, Iran Red Crescent Med J, 2016

USING CPAP WILL MAKE ME A ROCK STAR

A STATE OF CHRONIC INFLAMMATION

- The Sleepiness Soap Opera
  - Insufficient sleep syndrome
  - Obesity

Chouard, Acta Otolarngy, 2017; Stevenson, Obs. Rev. 2017; Mokhber, Iran Red Crescent Med J, 2016

USING CPAP WILL MAKE ME A ROCK STAR
Sleepiness Soap Opera

Insufficient Sleep Syndrome

- Difficult to awaken in the morning
- Hyperactivity
- Headaches
- Falling asleep in class
- Sleep time on weekends is often 3 or more hours more, compared to sleep time during the week.

A STATE OF CHRONIC INFLAMMATION

- Sleep Loss associated with Hypertension:
  - X 4
- Coronary Artery Disease:
  - X 2

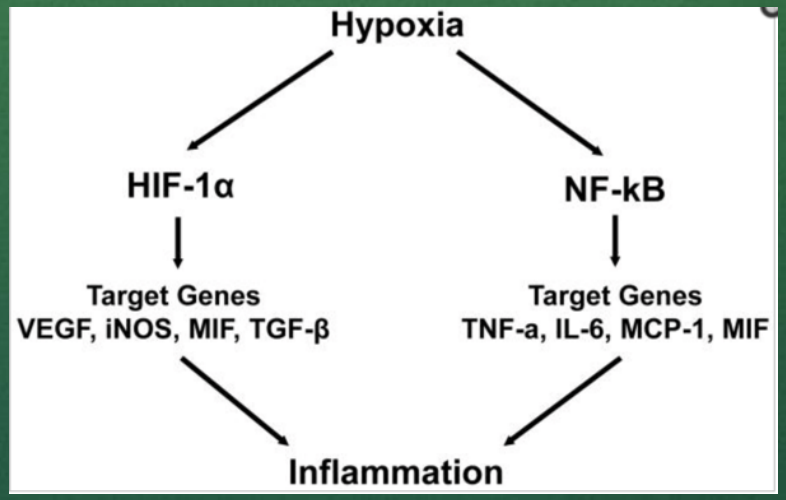
Chouard, Acta Otolarngy, 2017; Stevenson, Obs. Rev. 2017; Mokhber, Iran Red Crescent Med J, 2016

USING CPAP WILL MAKE ME A ROCK STAR

OBESITY: A STATE OF CHRONIC INFLAMATION

OBESITY

- W OR W/O CPAP
  - Chronic fatigue syndrome
  - Excessive daytime sleepiness
  - Dose response relationship between weight loss and improvement in EDS
  - Bariatric surgery: 66% EDS resolved



Hypoxia Inducing Factor (HIF)

Kahn, Curr Opin Urol, 2017, Stevenson, Obs. Rev. 2017; Mokhber, Iran Red Crescent Med J, 2016

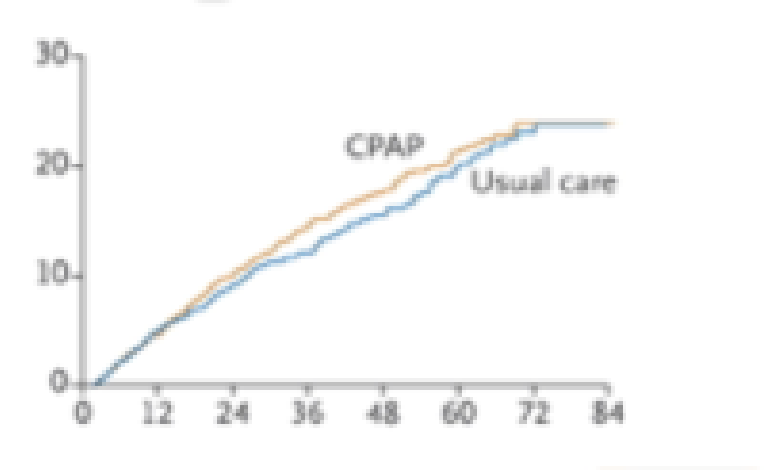
USING CPAP WILL MAKE ME A ROCK STAR

Maybe not, but it will improve your health

AND YOU WERE NOT A ROCK STAR ANYWAY

NEJM: "No change in CVD with use of CPAP"

- Average usage 3.3 hours per night



Significant change with use of CPAP

- J Neurology Schipper
- Usage > 4 hours per night

Kahn, Sleep Med Clinic, 2017; Rong, Chin Med Sci J. 2016; Itani, Sleep Med 2017, NEJM 2016

That being said…..

- CPAP actually IS often life changing for people if they were very symptomatic before!

Lie #4

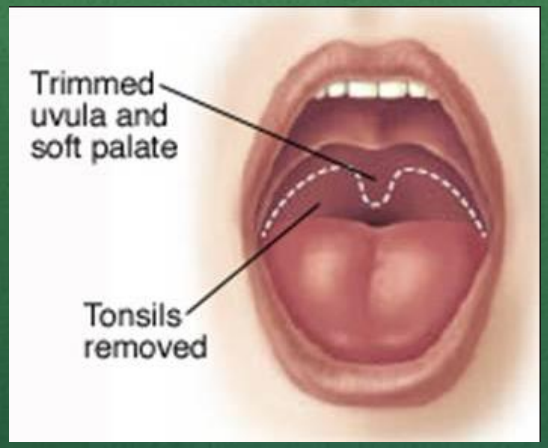
- **CPAP is the ONLY way to treat sleep apnea**

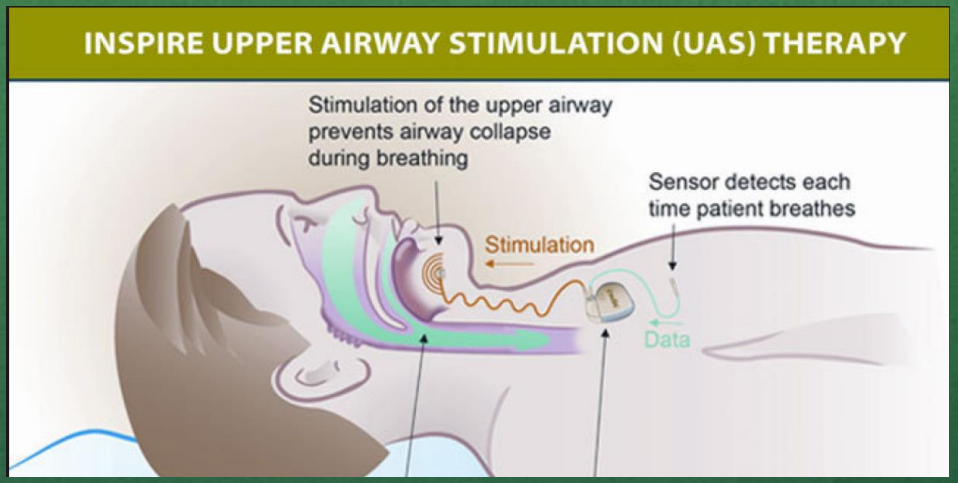
Does the Sleep Apnea need to be treated at all?

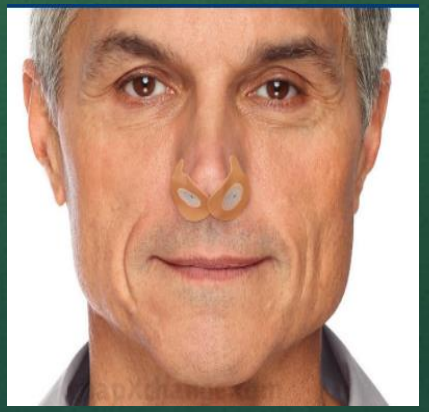
- **MILD sleep apnea**
  - **AHI < 15 and no symptoms**
  - **May not need to treat**
  - **(but do treat if significant symptoms or comorbidities)**
- **Typically: CPAP best for moderate-severe sleep apnea**

CPAP REIGNS

MORE THAN ONE WAY TO TREAT OSA

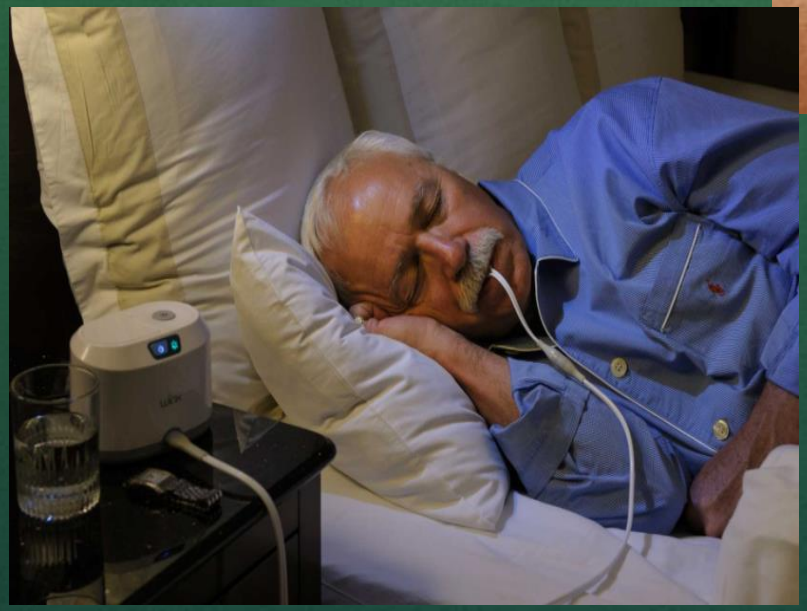




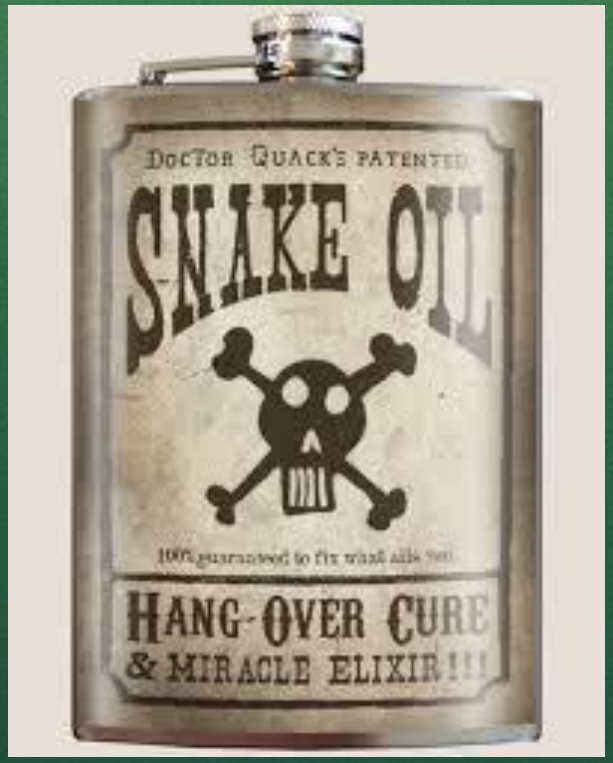


CPAP REIGNS

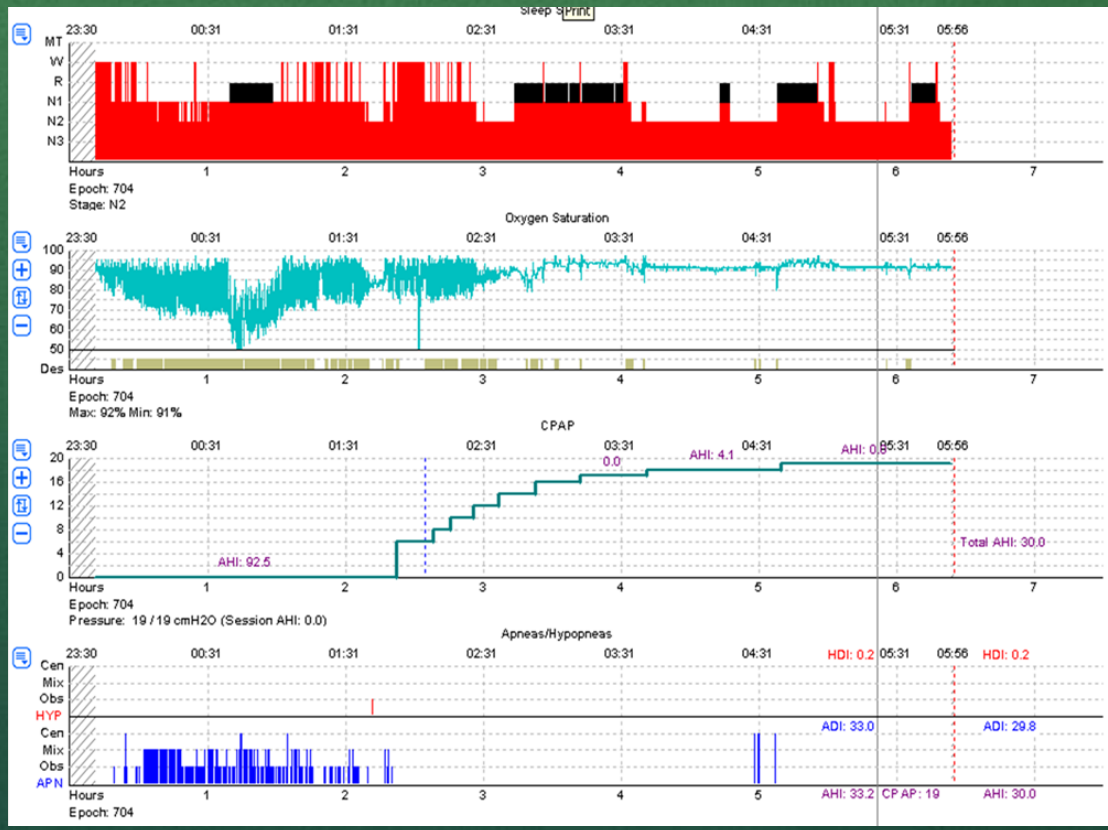
MORE THAN ONE WAY TO TREAT OSA



But beware……


DOCTOR QUACK'S PATENTED
SNAKE OIL
HANG-OVER CURE
& MIRACLE ELIXIR!!!

Pap IS highly effective and the technology continues to improve



Lie #5

- All Sleep Testing is the same

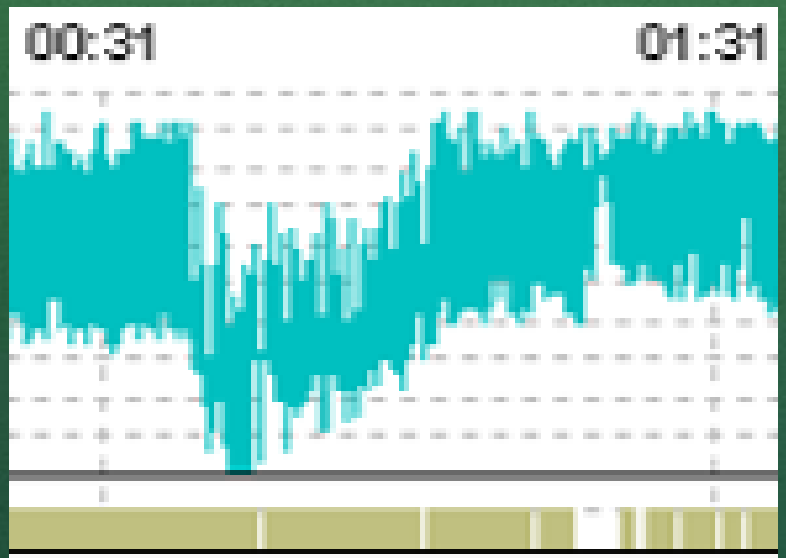
- Lie #5.5 -- Everyone who gets a sleep study gets diagnosed with sleep apnea

Overnight Oximetry

- NOT RECOMMENDED FOR DIAGNOSIS (but may give you a hint)
- Specificity=97%; Sensitivity=69%
- Lots of False Negatives
- Look for the "beards"

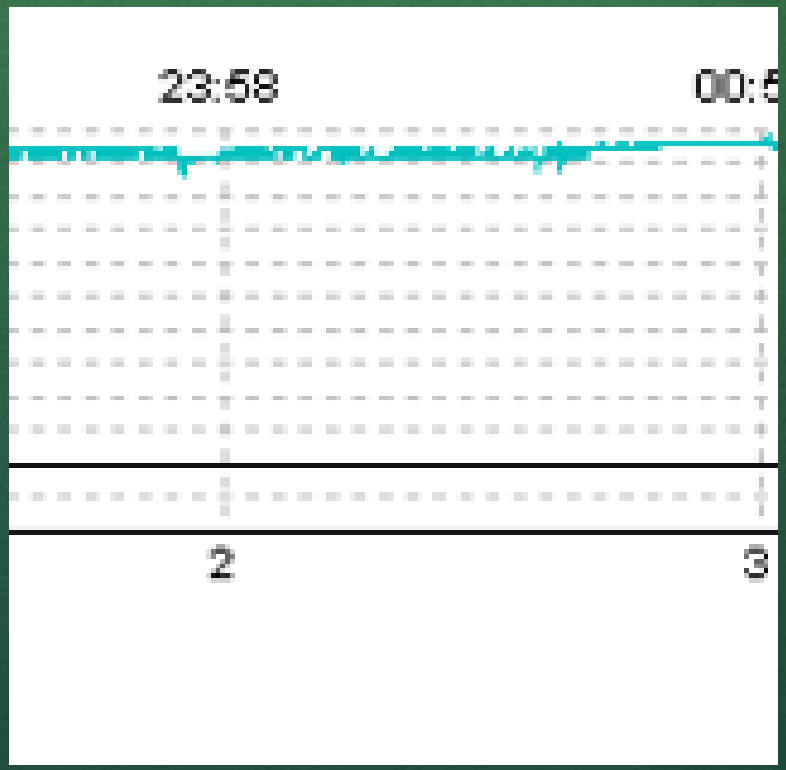
Overnight Oximetry

Sleep Apnea



High Desaturation Index increases the likelihood of sleep apnea

Normal



Home Sleep Studies

- The GOOD:
  - More cost effective, you get to be at home, and there are a LOT fewer wires!
- Underestimate the severity of the SDB
- Only use if there is a HIGH pretest probability for MODERATE-to-SEVERE OSA
- DO NOT USE: mod-to-severe pulmonary dz, neuromuscular d/o, CHF, risk factors for central sleep apnea

It's your responsibility to tell me you have sleep apnea!
Home Sleep Testing

20% FAILURE RATE

20% false negatives.

20% INACCURACY

Walia et al., J Okla Med Assoc 2014

YOU MUST TELL YOUR DOCTOR YOU HAVE SLEEP APNEA

TESTING FOR SLEEP APNEA

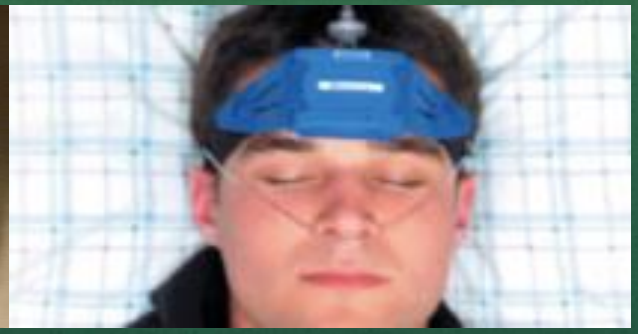
WHICH ONE IS A HOME SLEEP TEST

1

2

3

4



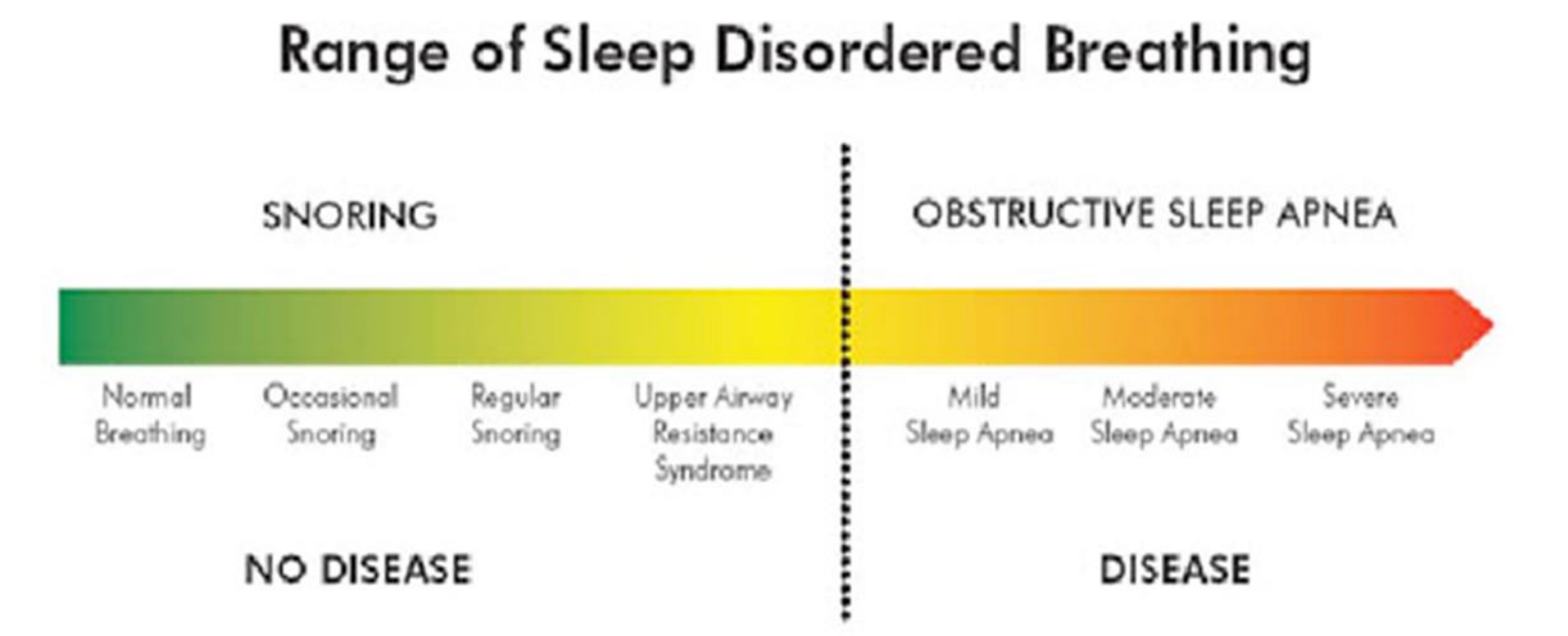
5

6

In-Lab Polysomnogram

- Gold standard
- All high risk patients should be done in-lab
- Other uses:
  - Periodic Limb Movements of Sleep
  - REM Behavior Disorder
  - Sleep-related seizures
  - Other abnormal sleep behaviors (parasomnias)

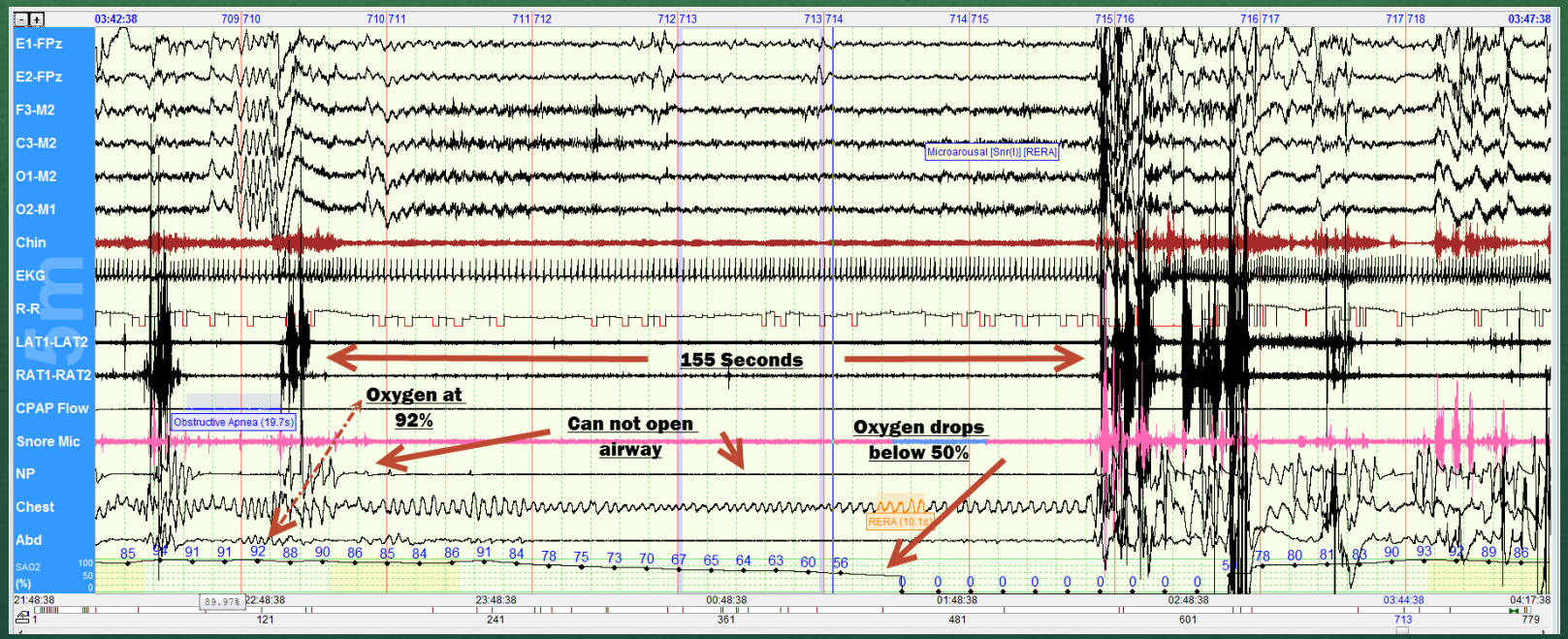
Does EVERYONE have sleep apnea?



Lie #6

- If you don't use your CPAP you will DIE

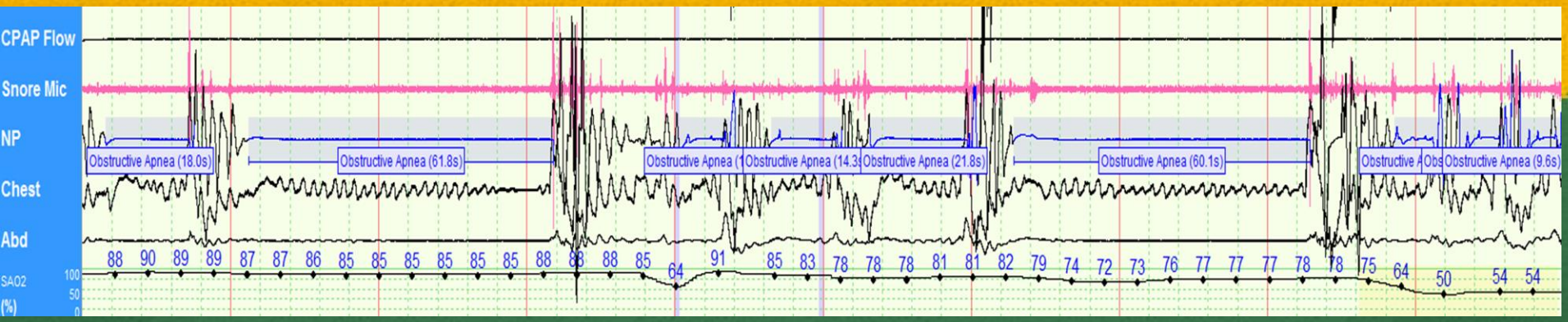
You Will Die if you Don't use your CPAP
SLEEP APNEA
PLACE IN ARENA OF SEVERE HYPERTENSION

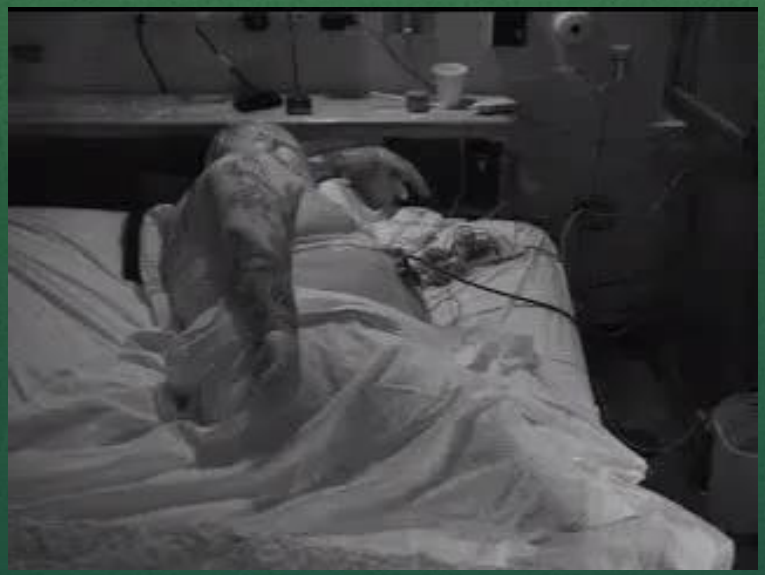


You Will Die if you Don't use your CPAP

SLEEP APNEA

PLACE IN ARENA OF SEVERE HYPERTENSION





How Long Could You Hold Your Breath?

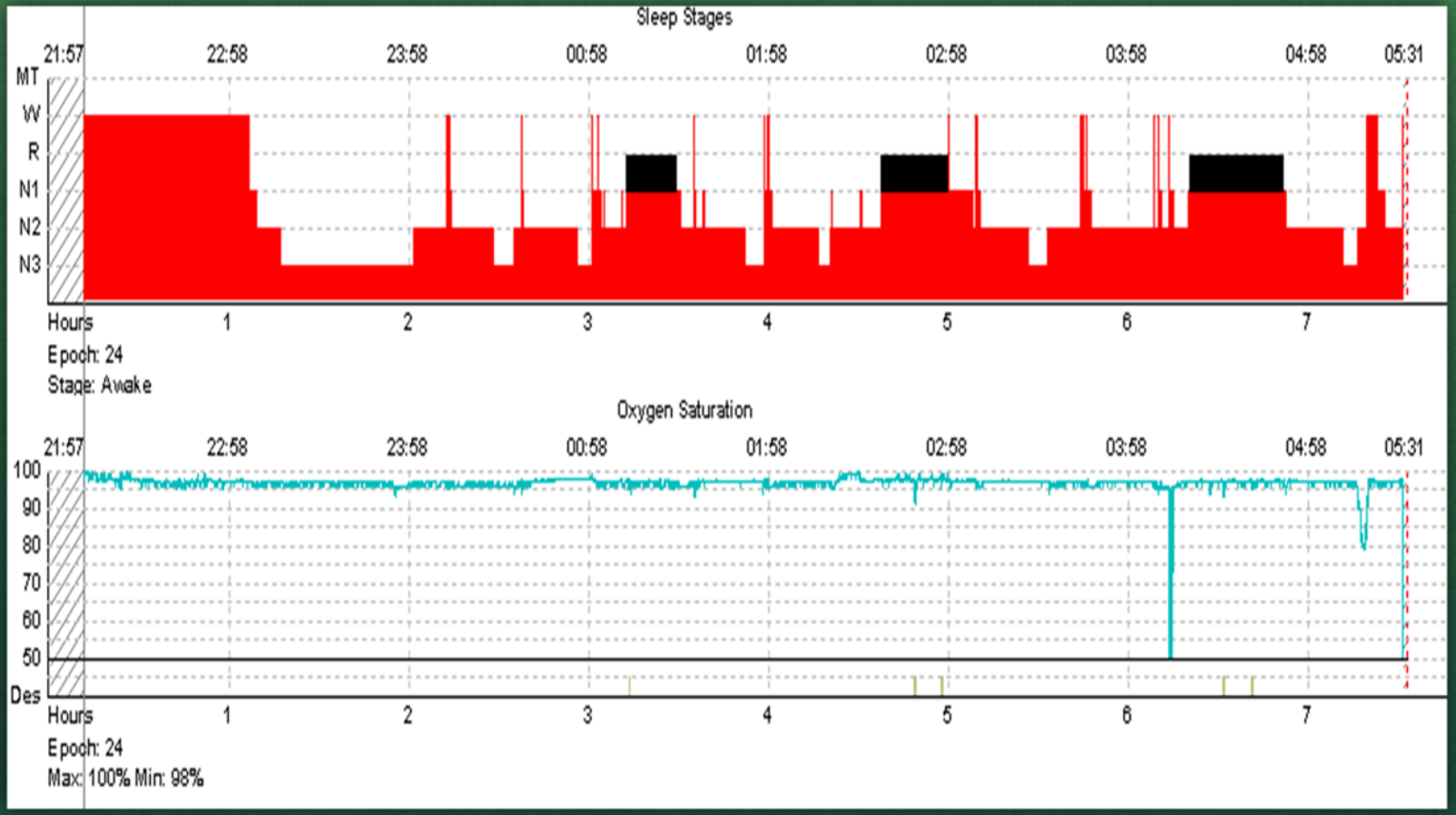
Okay but you cheated!

- Now blow OUT all of your air and try to hold your breath this long!
- OSA often happens at END EXPIRATION!
- Next challenge…..
  - Try to do this 30 times (OR MORE) in an hour
  - All night long
  - Every single night

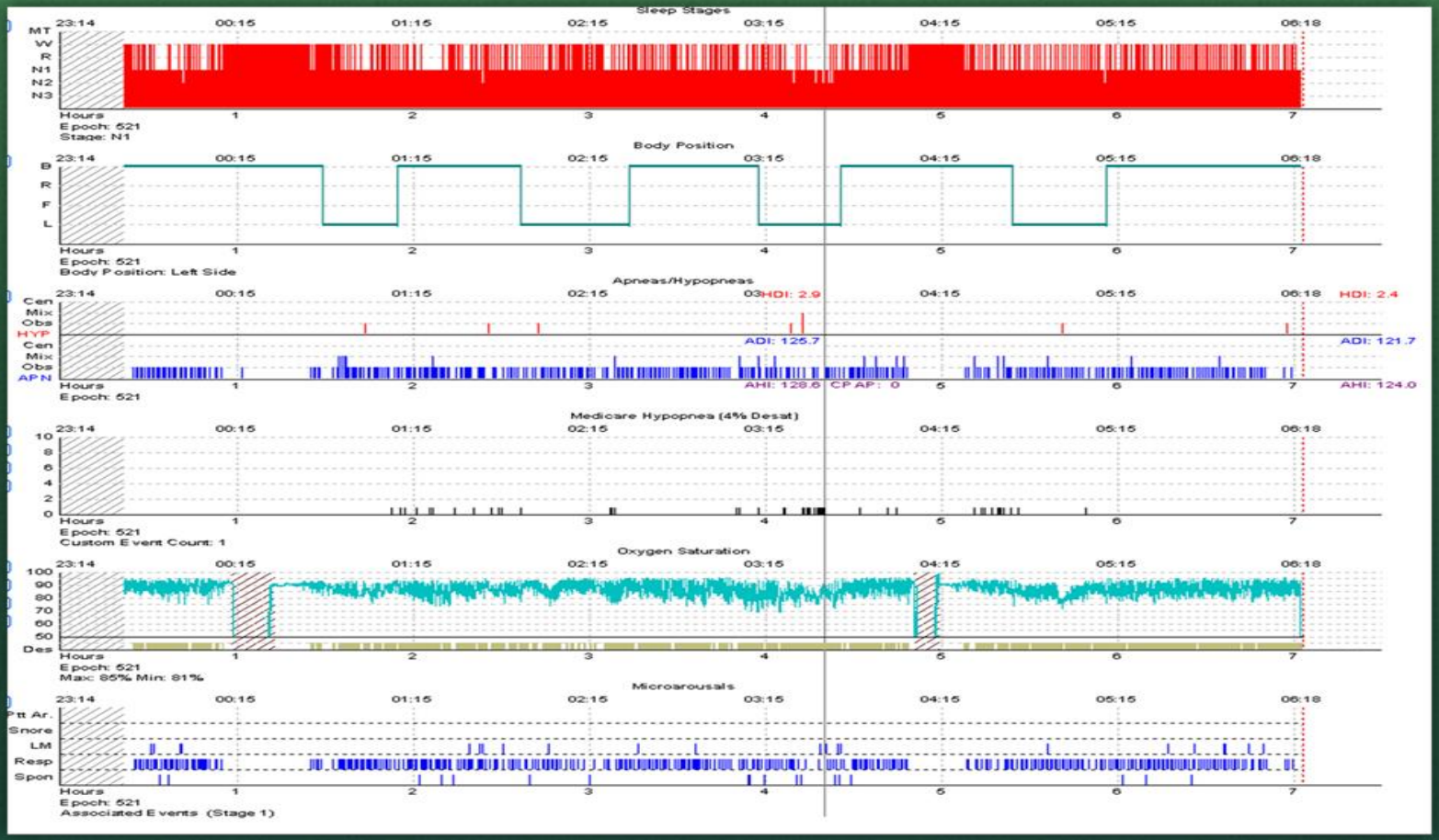
Remember…..

- They do this all night long every single night
  - Hypoxia
  - Hypercapnia
  - Brady-tachy response
  - Sympathetic discharges
  - Elevated BP

Normal Sleep Hypnogram



Hypnogram with Severe OSA



Why Don't They Die?

- Remember all of those arousals?
- Our brains recognize that there is a problem
- Momentary arousal restores the airway patency of wakefulness
- Airway opens and they breathe

OSA + CNS Depressants = BAD

- Made worse by respiratory and CNS depressants
  - Alcohol
  - Benzodiazepines
  - Barbiturates
  - Opioids

OSA + CNS Depressants = BAD

Usually, it's the years of no treatment that get you

Lie #7

- You need MORE REM sleep

Normal Sleep Hypnogram

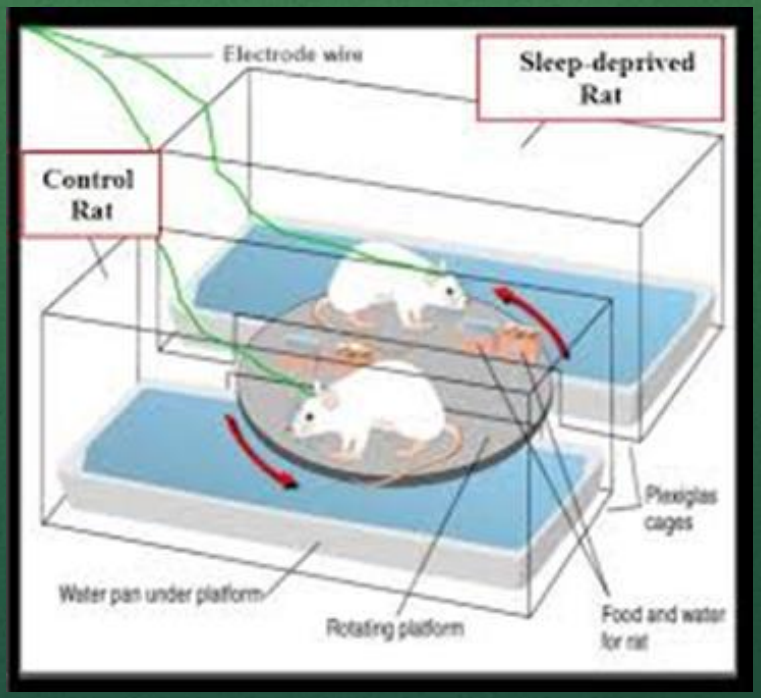
- Normally, REM is 20-25% of the night

What is REM anyway?

- "Rapid Eye Movement" Sleep or "Dream Sleep"
- Body inactive (muscle paralysis)
- Brain active (brain waves look similar to wake)
- Seems to be important in learning/memory/synapse formation & pruning
- You probably have REM even if you don't remember your dreams
- You can dream in Non-REM sleep

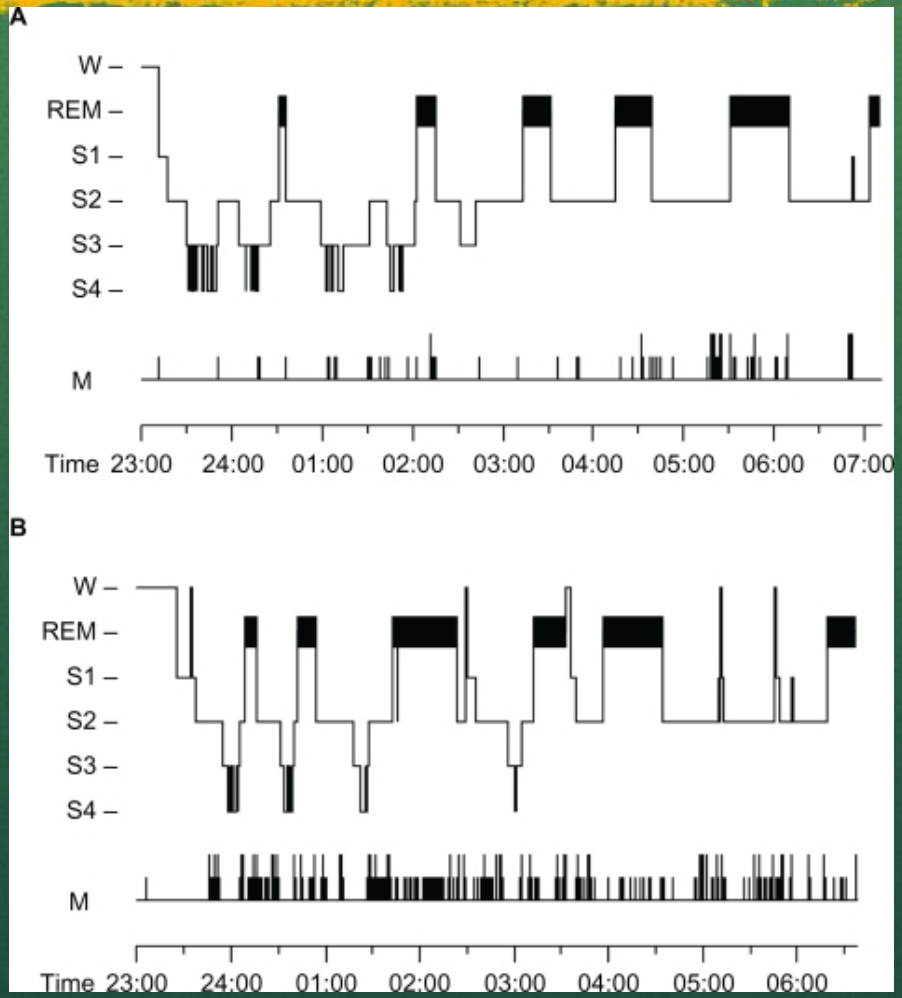
Rats Need It!

- Animal sleep deprivation studies (Rechtschaffen et al 1983)
- Rats placed on discs over water
- When EEG showed sleep, the discs would rotate & rat had to stay awake to stay out of water
- The lost wt, looked ill, had increased metabolic rate, couldn't regulate temps
- All died within 33 days with total sleep deprivation
- With selective REM deprivation, it took longer but they also died!



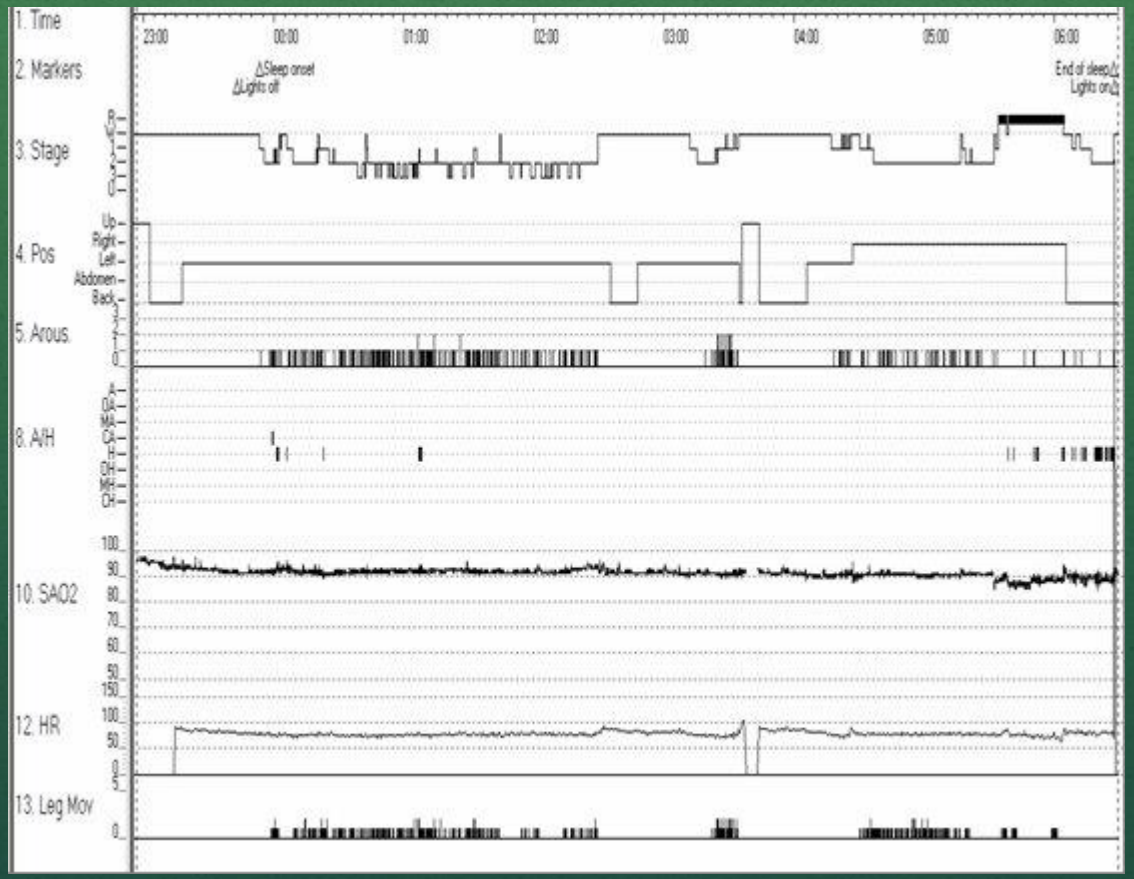
However, is more better?

Normal vs Depression



Is Less Better?

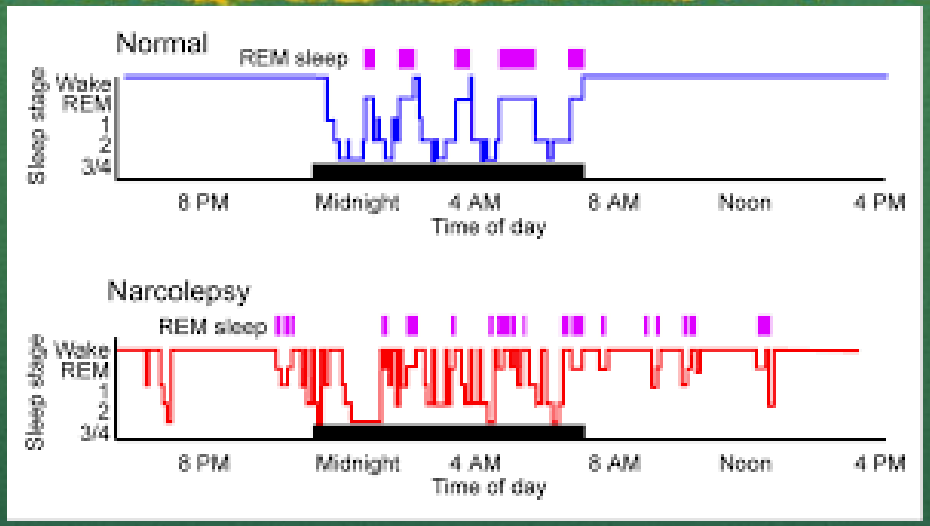
Depression treated with SSRIs/SNRIs/TCAs

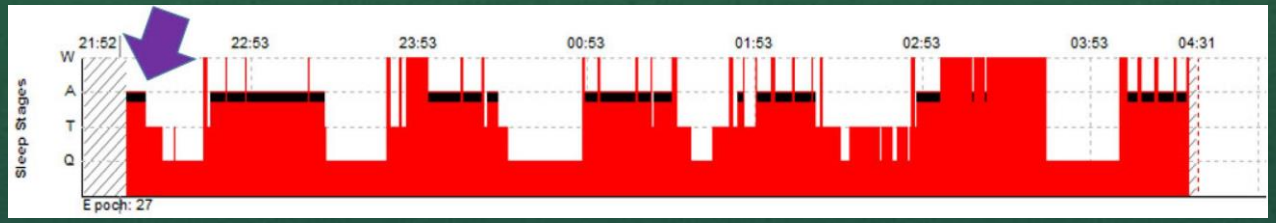


Maybe more is not better?

- Haye's 1970 REM deficit theory:
  - Criminals do not have REM sleep
- 1980: Psychopaths tended to have higher amounts of REM sleep

Maybe it all depends?





The Truth?

- We don't really know all of the functions of REM
- We don't understand why sometimes more or less is better for individuals
- People probably shouldn't lose sleep worrying about it

Down the Rabbit Hole of Medical Misinformation Conclusion

- Good sleep hygiene Important
  - **If you feel good, you've slept enough**
- If you can't sleep, go to work! You LIKELY have
  - **Delayed Sleep Phase Syndrome**
- CPAP treatment of OSA will make me healthier but not a rock star
  - Excessive daytime sleepiness (EDS):
    - CHRONIC INFLAMATION
    - YOU DIDN'T SLEEP ENOUGH
    - OBESITY
- There are many treatments for mild-moderate sleep apnea
  - And lots of gimmicks
- You will die if you stay with a doctor who has not done his/her job
  - OSA IS NOT A MEDICAL EMERGENCY
  - CPAP DOES NOT CURE EVERYTHING
- REM sleep: remains a mystery

I want to be sedated

Questions?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"Test results are back. Coffee, donuts, sleep deprivation. Doc, you've got to start taking better care of yourself."