Parasomnias Can Kill:
The Facts Behind Abnormal Behaviors During Sleep

Jerald H. Simmons, M.D.

Director, Comprehensive Sleep Medicine Associates (CSMA)
Director, Sleep Education Consortium (SEC)
Director, REST Technologies

www.CSMA.clinic

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Parasomnias

Definition: Abnormal Behaviors During Sleep

Three Categories:

Non-REM

Disorders of Arousal :
- **Confusional Arousals**
- **Sleepwalking**
- **Sleep Terrors**

REM

REM Behavior Disorder

Nocturnal Seizures

Can occur in any stage of sleep – maybe more likely in non-REM, but NOT sleep stage specific

Non-REM parasomnias can be triggered by:

- Obstructive Sleep Apnea
- Periodic Leg Movements of Sleep
- Medication enhanced parasomnias

Night Terror – a type of non-REM parasomnia
Associated with Post Traumatic Stress Disorder

Parasomnias can not be properly assessed with HSAT.
Polysomnography needs to be done and sometimes epilepsy monitoring.

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Some examples of complex (automatic) behaviors people have had during sleep

Los Angeles Times

'Sleepwalker' Acquitted of Murdering Mother-in-Law After 15-Mile Drive

Kenneth Parks Case (1987):

- **Incident:** Kenneth Parks, a 23-year-old man from Toronto, drove approximately 14 miles to his in-laws' home while asleep, entered their house, and attacked them, resulting in the death of his mother-in-law.
- **Defense:** Parks claimed to have been sleepwalking during the incident and had no recollection of his actions.
- **Outcome:** He was acquitted of murder charges after the court accepted his sleepwalking defense.

Abnormal behaviors during sleep, known as parasomnias, can involve very elaborate tasks such as driving and cooking, cutting etc.

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The Guardian

Sleepwalking chef's recipe for disaster

As a former chef, Robert Wood could rustle up an omelette in his sleep. Except he does. And stir fries, and even spaghetti bolognaise, all without waking from his nightly slumbers.

Now Mr Wood, 55, from Fife, is seeking help for the sleepwalking which sees him heading for the kitchen of his Glenrothes home four or five times a night.

Mr Wood has suffered from somnambulism for 40 years, but says he and his wife, Eleanor, are growing increasingly concerned at his culinary exploits. Mrs Wood has witnessed her husband doing everything from setting the table to pouring a box of cereal and a carton of milk into a tiny bowl. She has caught him making omelettes and spaghetti bolognaise and even putting on the chip pan.

The couple say they can get only a few hours sleep a night and are getting worried that Robert could start a fire without realising. "I really am asleep and have no idea I am getting up," said Mr Wood.

"The first time it happened I was 14. My parents heard me wandering downstairs in the middle of the night. Now I get up four or five times a week and I mainly seem to head to the kitchen, though I have also put the television on very high and run the bath."

Mr Wood has now been referred for specialist help. Chris Idzikowski, of the Edinburgh Sleep Clinic, said they hoped to be able to help. "We believe Robert may be suffering from breathing problems that are affecting his quality of sleep."

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https://www.youtube.com/watch?v=Q63IXIuMaWA

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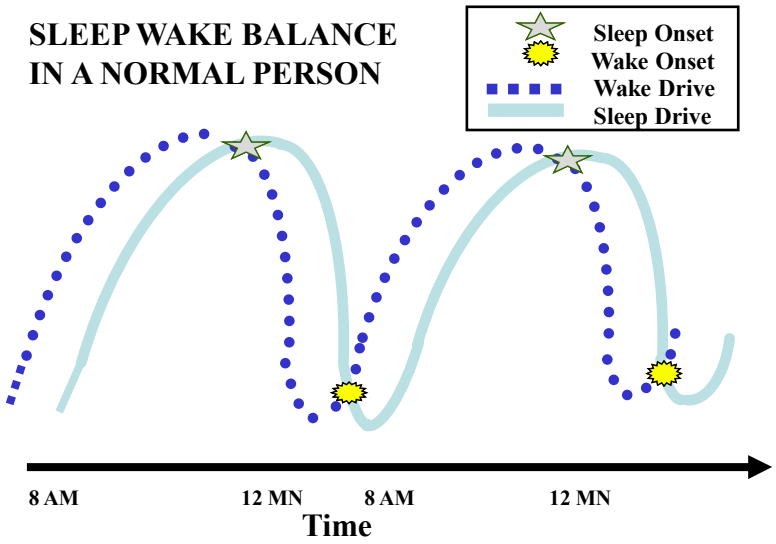

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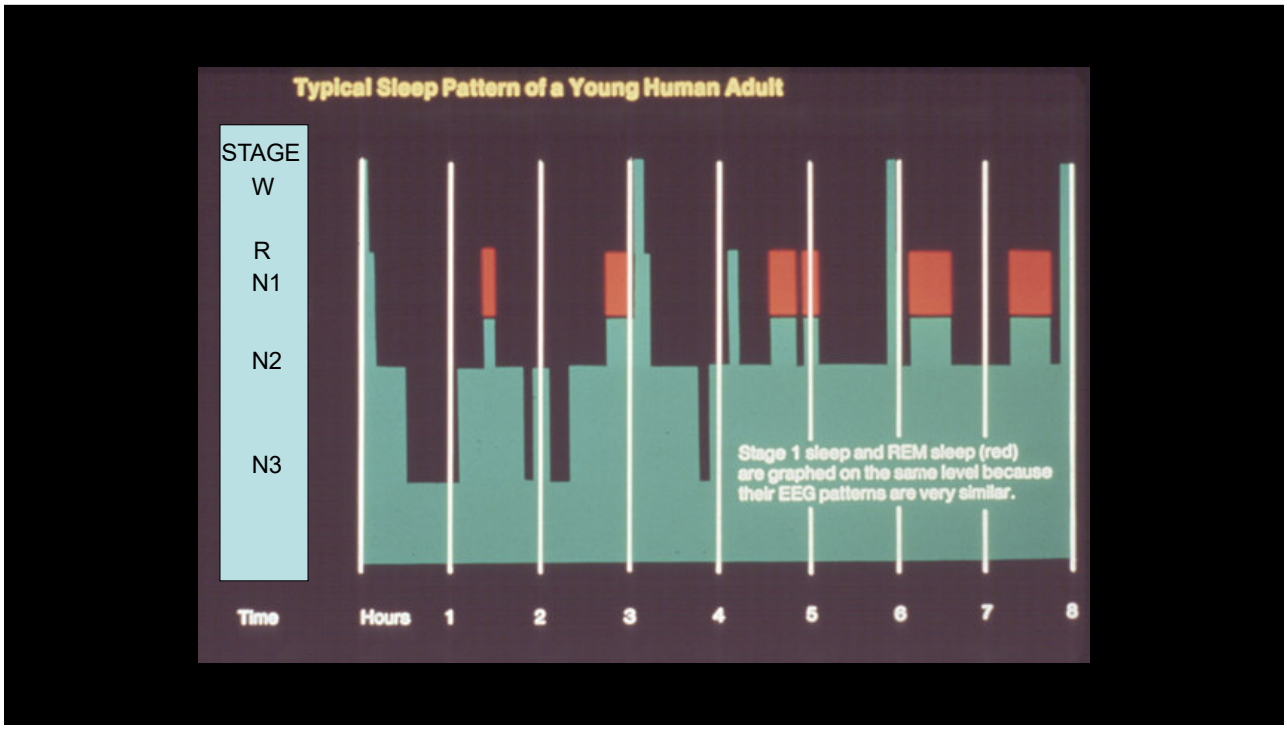

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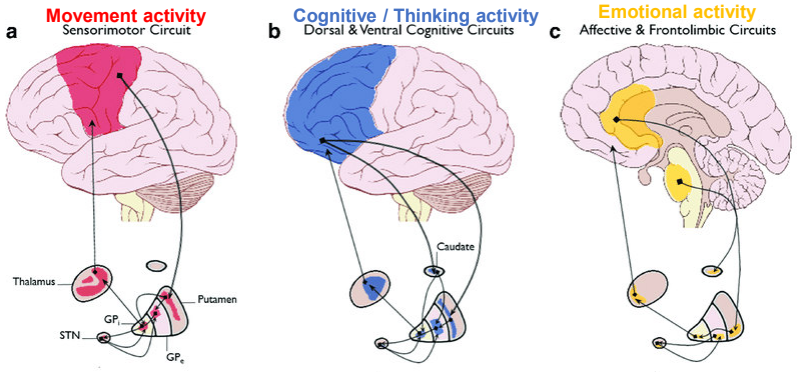
Wakefulness

During wakefulness, there are very active pathways involved different functions

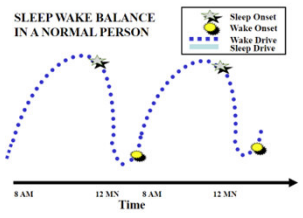
Examples of Different Pathways
a) Motor function b) Cognitive Function c) Emotional Function



Factors that increase Wakefulness

- Movement
- Emotions such as stress
- Actively thinking

These stimulate the brain enhancing the wake state



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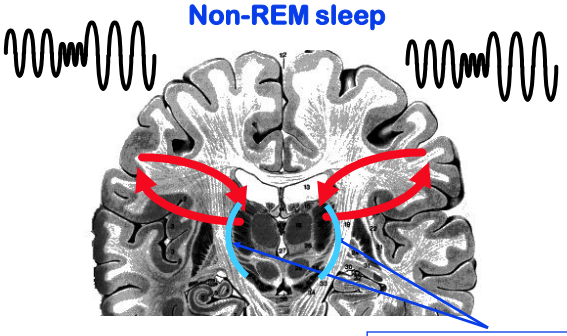
Non-REM Sleep

During Non-REM sleep, the Reticular Thalamic Nucleus inhibits sensory input from the Thalamus that goes to the cortex (Thalamocortical pathways) which produces synchronous EEG activity during Non-REM sleep

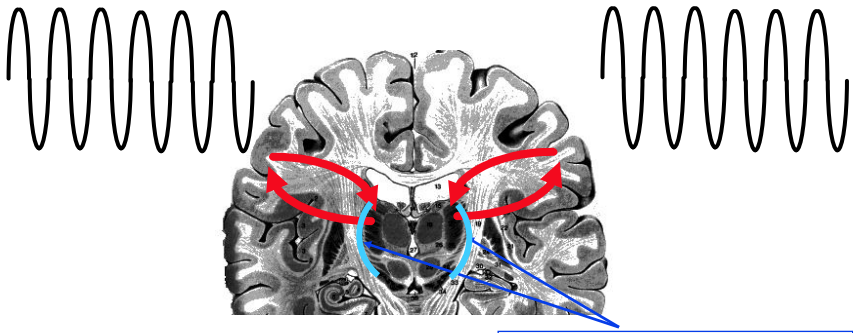


Reticular Thalamic Nucleus (Filter)
GABA inhibitory neurons that induce sleep

9

Non-REM Sleep N3 (Slow Wave Sleep)

The deepest level of sleep is N3 also known as Slow Wave Sleep, named by the high voltage slow waves that are present during this sate of sleep.



Reticular Thalamic Nucleus (Filter)
Using GABA inhibition, induces sleep

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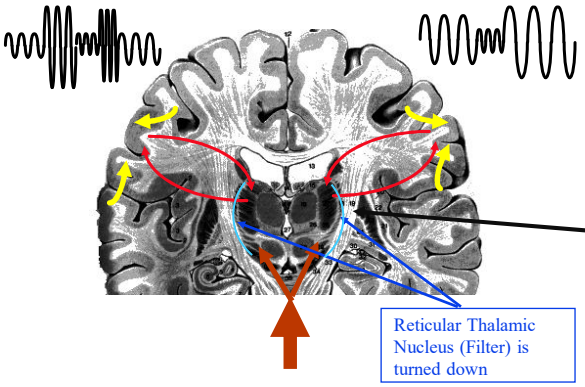
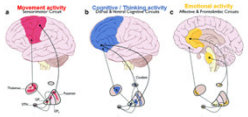
Wakefulness

The Ascending Reticular Activating System inhibits the Reticular Thalamic Nucleus allowing the cortex to be active during wakefulness



Reticular Thalamic Nucleus (Filter) is turned down



These systems in the brain are able to function because the "Filter" is turned down.

The Ascending Reticular Activating System Produces Desynchronization of the EEG During Wakefulness by Inhibition of the Reticularthalamic Nucleus.

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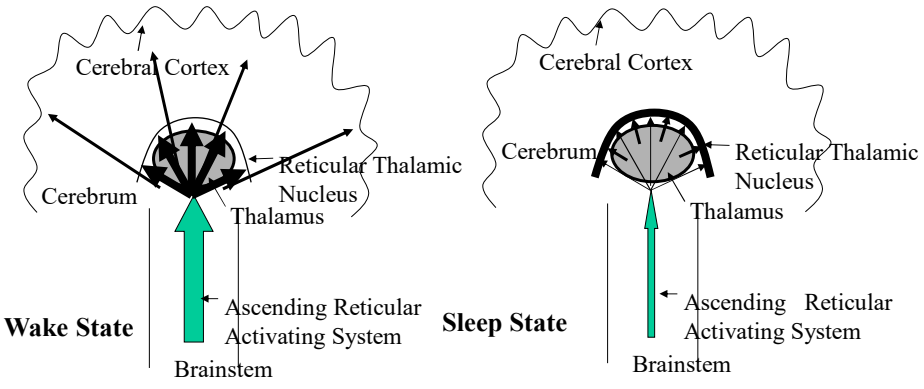

Physiologic Mechanism of the Sleep Drive / Wake Drive system and the balance between sleep and wake states

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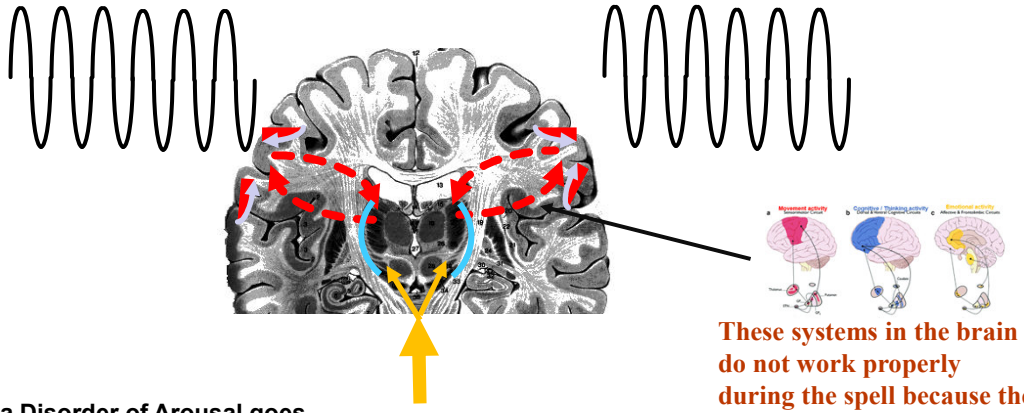
Disorders of Arousal : Confusional Arousals, Sleepwalking & Sleep Terrors

Stimulation during Slow Wave Sleep causes a partial awakening, also called an arousal, but in some people on rare occasion, rather than waking up or going back to sleep, the person goes into a state between sleep & wake (Dissociative State).



These systems in the brain do not work properly during the spell because the brain is partially asleep (the filter is turned up).

The person with a Disorder of Arousal goes into a Dissociative State between Sleep and Wake.

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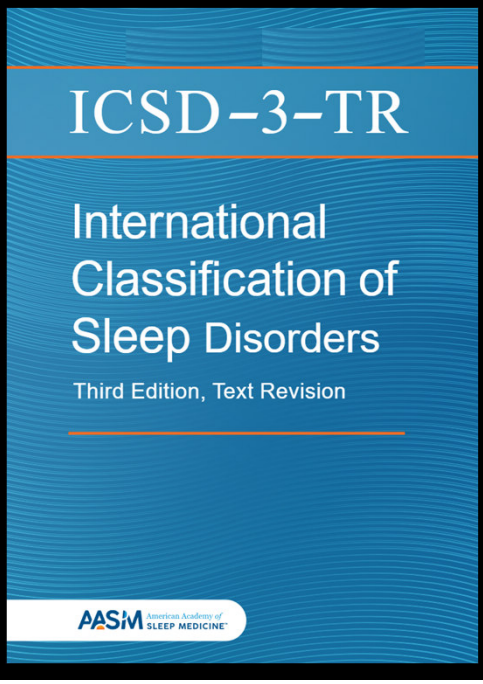
Released in 2023



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NREM-Related Parasomnias

Disorders of Arousal (From NREM Sleep)

This group of NREM-related disorders, which includes confusional arousals, sleepwalking, and sleep terrors, arises as a result of incomplete arousals from deep sleep (slow-wave sleep – SWS). The concept of "sleep state dissociation" has been elaborated to explain the occurrence of neurophysiologic features of both wakefulness and sleep in the disorders of arousal. These conditions share: (1) similar genetic and familial patterns; (2) similar pathophysiology of partial arousals from slow-wave sleep; and (3) similar priming by sleep deprivation and biopsychosocial stressors. Disorders of arousal may be triggered by sound, touch, or other stimuli. They are associated with absent or minimal cognitive functioning and partial or complete amnesia for the episode. These disorders are not secondary to psychiatric disorders, nor are they generally secondary to neuropathology or head injury.

General Diagnostic Criteria for Disorders of Arousal

Criteria A-E must be met

A. Recurrent episodes of incomplete awakening from sleep.[1]
B. Inappropriate or absent responsiveness to efforts of others to intervene or redirect the person during the episode.
C. Limited (e.g., a single visual scene) or no associated cognition or dream imagery.
D. Partial or complete amnesia for the episode.
E. The disturbance is not better explained by another current sleep disorder, medical disorder, mental disorder, or medication/substance use.

Notes

1. The events usually occur during the first third of the major sleep episode.
2. The individual may continue to appear confused and disoriented for several minutes or longer following the episode.
3. For some adults there can be recurrent, complex dream-enacting behaviors during the episodes, as reported in well-documented cases.

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Sleepwalking

ICD-10-CM Code: F51.3

Alternate Names

Somnambulism.

Diagnostic Criteria

Criteria A and B must be met

A. The disorder meets general criteria for NREM disorders of arousal.
B. The arousals are associated with ambulation and other complex behaviors out of the bed.

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Essential Features of Disorders of Arousal

Disorders of arousal consist of behaviors that are usually initiated during partial arousals from slow wave (stage N3) sleep and more rarely from stage N2 sleep. Most episodes are brief, but they may last as long as 30 to 40 minutes in some children. Sleep talking and shouting may accompany these events. The eyes are usually open during an episode and, not uncommonly, are wide open with a confused "glassy" stare. The patient with a disorder of arousal may be very difficult to awaken and, if awakened, is often confused. There is usually amnesia for these episodes, although adults may remember fragments of episodes. Dream-like mentation is sometimes reported in adults. Other high-level cognitive functions such as attention, planning, coherent social interaction, and intent are absent. Because disorders of arousal usually originate from slow wave sleep, they most often emerge in the first third or first half of the typical sleep period. They may occur during other times of increased slow wave sleep, such as during recovery sleep following sleep deprivation. They rarely arise from a daytime nap.

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Confusional arousals Confusional arousals, unlike sleepwalking, occur with the patient in bed. When the patient leaves the bed, sleepwalking has been initiated. Confusional arousals often start with the individual sitting up in bed and looking about in a confused manner.

Sleepwalking Sleepwalking episodes typically begin as confusional arousals. Sleepwalking episodes can also begin with the individual immediately leaving the bed and walking or even "bolting" from the bed and running. Highly inappropriate,

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Parasomnias

agitated, resistive, belligerent, or violent behavior can also occur. Behaviors can be simple and non–goal-directed, or complex and protracted, and may involve inappropriate sexual activity with oneself or an individual nearby, such as a bed partner. The ambulation may terminate spontaneously, at times in inappropriate places, or the sleepwalker may return to bed, lie down, and continue to sleep without reaching conscious awareness at any point. The sleepwalking individual is disoriented in time and place, with slow speech, severely diminished mentation, and blunted response to questions or requests. There is often prominent anterograde and retrograde memory impairment. Despite diminished external perception due to blockade of sensory input, the individual may appear to be awake with eyes open during some or most of an episode, with reduced vigilance and impaired cognitive response.

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Note that seeking out the victim is not listed as exclusionary.

Violence to others also can occur with adult sleepwalking, especially in men. The sleepwalker does not generally seek out the eventual victim of violence. More typically, a person attempting to block, grab, restrain, redirect or awaken a sleepwalker during an episode may be violently attacked, even if they are family members or friends. This confrontation may result in a form of primitive defensive aggression by the sleepwalker, including pushing, hitting, kicking, or throwing objects. This pattern also has been reported in the sleep laboratory when technical personnel have attempted to return sleepwalking patients to bed. In extreme cases, victims have been stabbed with knives or hit with blunt objects. Such inappropriate and violent behaviors have legal and forensic implications. Sleepwalkers have been arrested and charged with assault and battery, attempted homicide, homicide, and sexual assault with indecency.

From Page 285

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OSA and other sleep-related respiratory events may trigger disorders of arousal in both children and adults. Treatment of comorbid conditions may reduce or eliminate the occurrence of disorders of arousal. Disorders of arousal may also be triggered by environmental stimuli such as contact with the bed partner, telephone calls, pagers, messaging from electronic devices, and a host of other stimuli. It is clinically important

From Page 287

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Sleepwalking can begin as soon as a child can walk but may begin at almost any time in the life cycle, including as late as the seventh decade. Sleepwalking is often preceded by confusional arousals. Childhood sleepwalking usually disappears spontaneously around puberty but may persist into adolescence. Episodes can occur sporadically or with high frequency, such as multiple times nightly for several consecutive nights. Sleepwalking may occur for the first time in adulthood or may recur in adulthood during periods of sleep deprivation or stress. In adults with sleepwalking, 73% have reported childhood-onset sleepwalking. Violence during sleepwalking episodes was more frequent in males, with nearly half reporting self-injury and violence towards others during sleepwalking episodes. More than half of adolescent and adult patients with sleepwalking have reported complex and bizarre interactions with the environment and violent behaviors. Stress is a reported trigger for episodes in 80% of patients.

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Pathology and Pathophysiology

The overwhelming majority of individuals with disorders of arousal do not have neurological or psychological pathology. There are rare, reported cases of confusional arousals associated with brain lesions in areas subserving arousal, such as the posterior hypothalamus, midbrain reticular area, and periventricular gray matter. However, data from four single patient studies using sophisticated imaging or EEG analysis during

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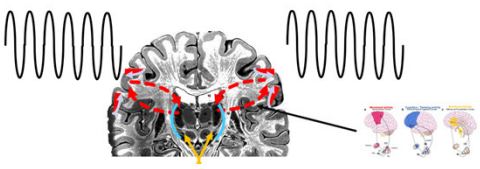
Parasomnias

sleepwalking or confusional arousals suggest that they may be due to a functional abnormality in the brain that leaves some regions, such as hippocampus and frontal associative cortices, asleep, while other parts of the brain, such as motor, cingulate, insular, amygdala, and temporopolar cortices, are active or awake. Recent intracerebral recordings (with stereo-EEG) during sleep in treatment-resistant epileptic patients documented multiple confusional arousals associated with characteristic dissociated sleep-wake states across brain regions. A more recent high density (HD)-EEG study reported similar findings in a 12-year-old patient with twenty documented confusional arousals over two nights. These findings suggest that disorders of arousal represent a dissociation of sleep-wake activity across different regions of the brain, accompanied by activation of locomotor centers/central pattern generators and coupled with sleep inertia and sleep state instability.



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Benjamin's history:

Evaluation on Oct 10th, 2021

17 y/o male 5ft 9in, 254 lbs (BMI = 37.5)

Sleep history: Typically goes to bed about 11 PM - MN , falls asleep within 10 minutes, awakens occasionally to use the restroom, no more than once per night, typically awakens (or tries to awaken) at 6 AM for school. Difficulty with awakening, frequently requiring prompting by family members, during which he will frequently hold conversations of which he has no recollection afterwords. On weekends he will typically sleep until late morning or noon.

He is witnessed to **snore** to a moderate degree and has had **witnessed pauses in his breathing while asleep** dating back at least several years. He will frequently **awaken** with a **dry mouth** and **nasal congestion** which was not present when going to bed. He occasionally develops headaches.

During the day he experiences **daytime sleepiness**, requiring about an hour in the morning to finally feel more refreshed, but then mainly in the afternoon he will again feel sleepy and will resort to drinking coffee to help stay awake.

Past history of parasomnias dating back as a young child. Some of the witnessed parasomnias are:

1) Frequent instances over many years of talking to other in the room while asleep, usually using simple phrases such as "that's nice" or "ok" with no recollection of the conversations afterwords.

2) Prior Parasomnia: At about 10 yrs old, walked into the doorway of his sisters room, eyes wide open with a blank look, unresponsive to both of them trying to get his attention, and then he walked away spontaneously after a few minutes. No recollection afterwords. His sisters laughed about it and remembered it because he was clearly not acting normal at the time.

3) Prior Parasomnia: At about 13 yrs old, during a sleepover gathering at a family friends, Anand Sing, while asleep on the couch, he walked to the kitchen, grabbed a donut and returned to the couch, with no napkin or plate and started eating it, then his sister and friends came to the room and he suddenly woke up baffled that he had a donut in his mouth, telling them **he was dreaming** of eating a donut, and then woke up to find that he was in fact eating a donut. What stood out in Anand min that he remembered this event years later is that Ben was extremely puzzled by his actions with no memory of going to the kitchen etc.

4) Parasomnia like events: Almost nightly while asleep he would wrap a blanket around his neck and awaken that way with no memory of doing the act of wrapping it around his neck. This has been described by family members and Ben.

5) Additional parasomnias are reported to have occurred but **only those which were recounted to Dr. Simmons by direct witnesses of the event are listed above.**

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Family History:

Mother: Sleep Apnea
Father: Sleep Apnea

Parasomnias noted in family members as follows:
Older sister :Night terrors
Father: As a child noted to have excessive movements and thrashing. Numerous instances of falling out of bed. One time sustaining a laceration to his head requiring stiches. Always difficult to awaken, and would have automatic behaviors of talking and having conversation while asleep with no recollection. One instance after surgery, while anesthesia was wearing off, he had a violent event requiring temporary restraints (Post Operative Delirium) which may be relevant since he has a history of other parasomnia events as well.
Paternal Grandmother – violent thrashing and yelling.
Maternal aunt and uncle – both with elaborate events, aunt with episodes of wandering out of the house. also, with a history of OSA

Social Hx of significance:
The entire family, parents, both sisters and Benjamin were actively involved with scouting. His parents ran a scouting retreat facility in the wilderness that would host scouts from other areas for extended retreats. During these activities, there was regular use of knives, in a controlled, productive fashion, along the lines of camping accustomed wood working. Benjamin was extremely accustomed to using a large sharp knife.

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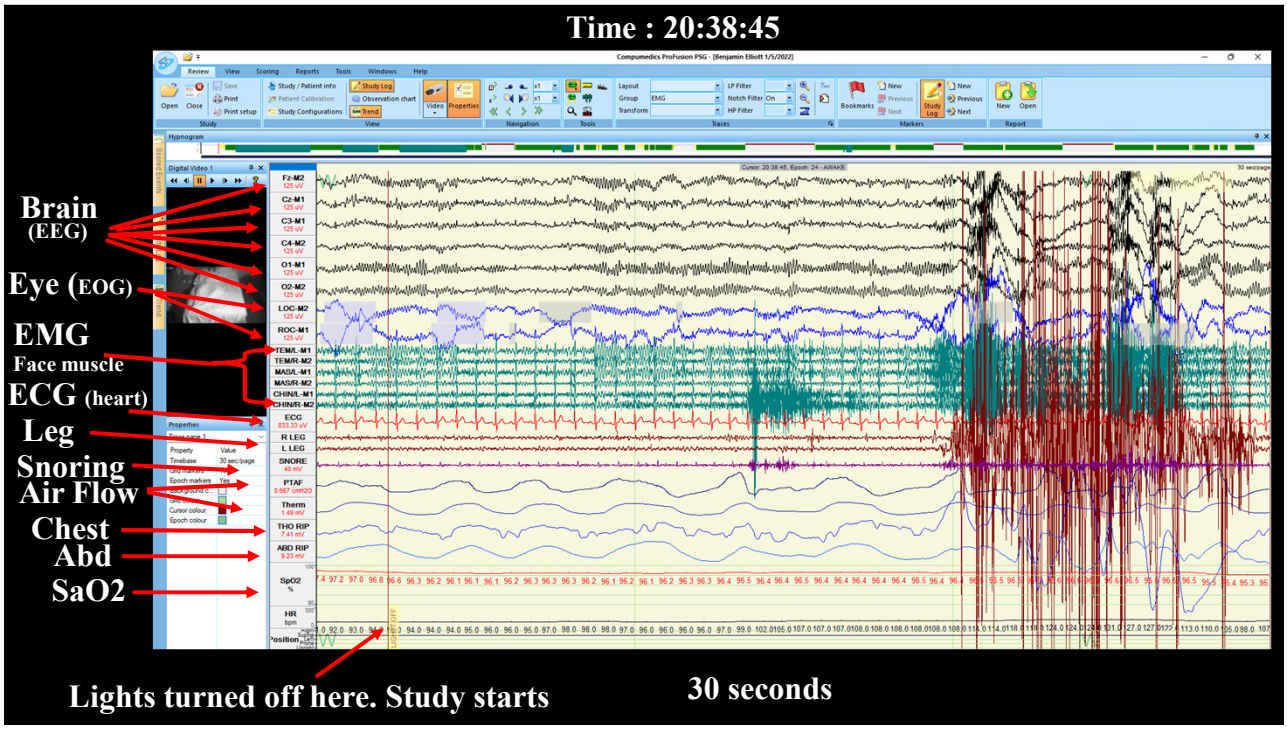
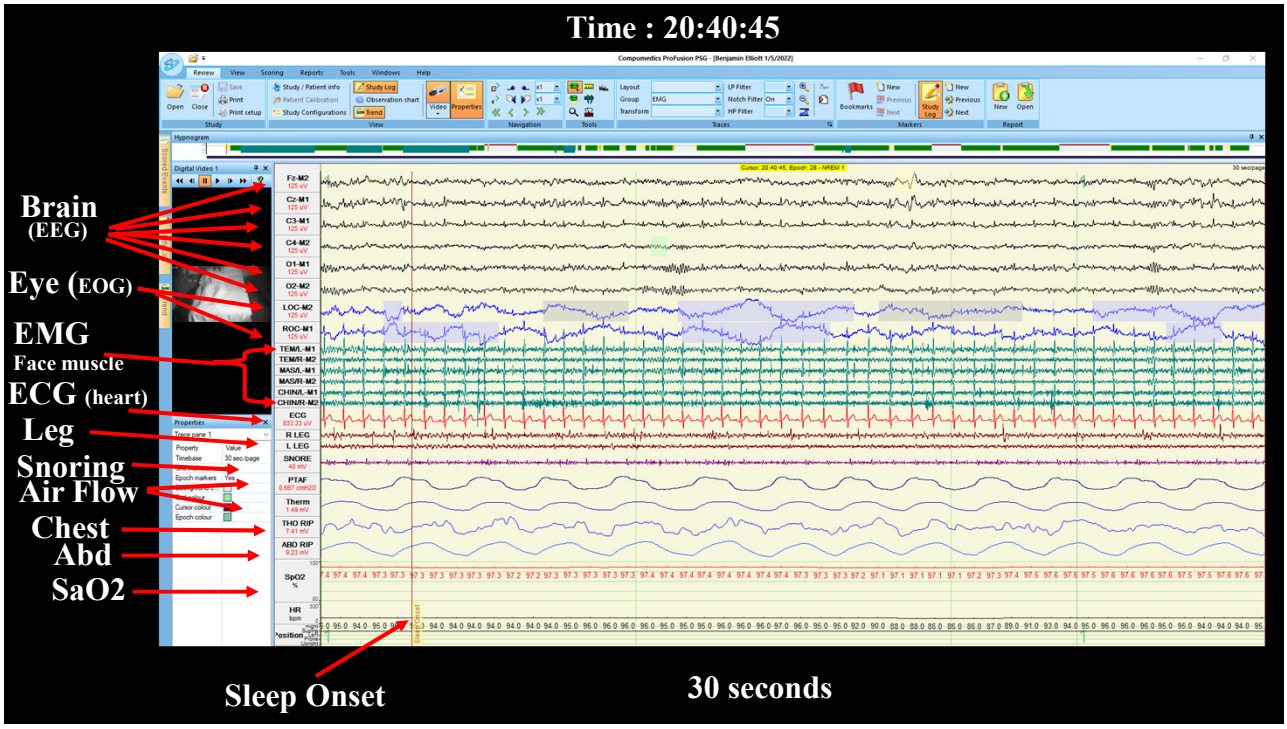
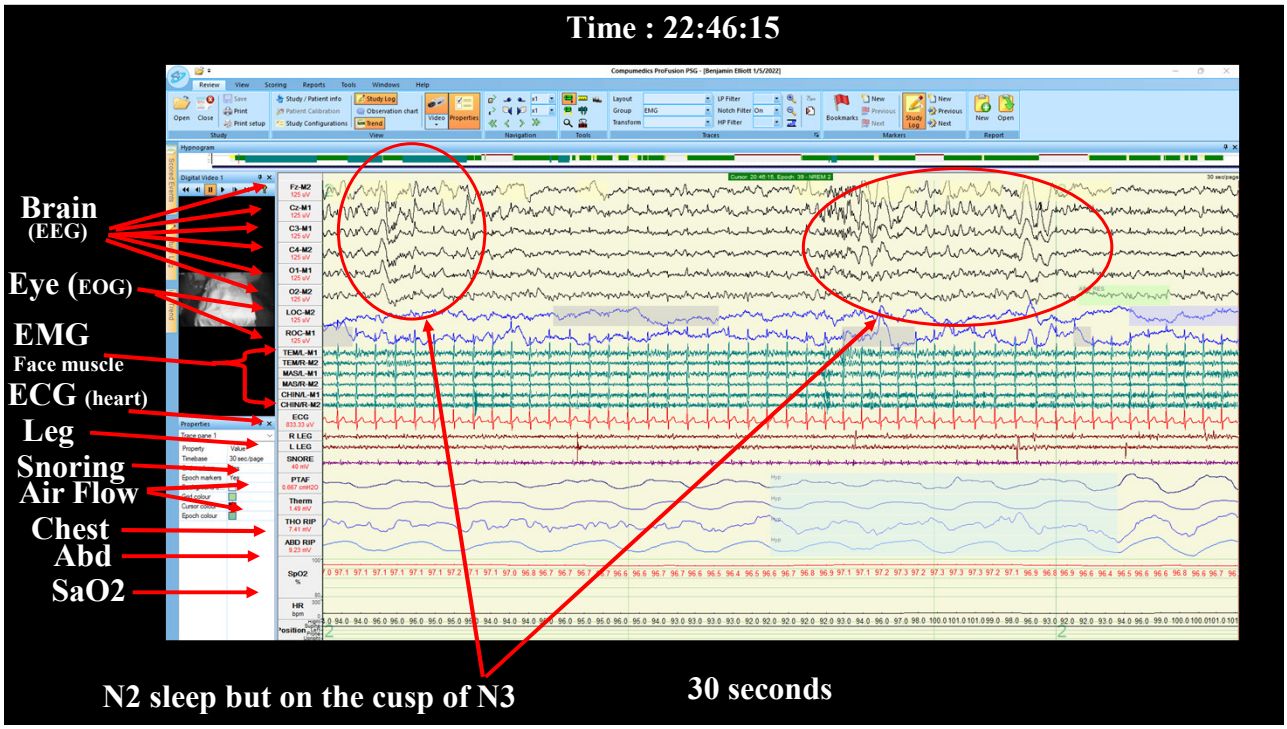

Time : 20:38:45
Brain (EEG)
Eye (EOG)
EMG
Face muscle
ECG (heart)
Leg
Snoring
Air Flow
Chest
Abd
SaO2
Lights turned off here. Study starts
30 seconds

25


Time : 20:40:45
Brain (EEG)
Eye (EOG)
EMG
Face muscle
ECG (heart)
Leg
Snoring
Air Flow
Chest
Abd
SaO2
Sleep Onset
30 seconds

26


Time : 22:46:15
Brain (EEG)
Eye (EOG)
EMG
Face muscle
ECG (heart)
Leg
Snoring
Air Flow
Chest
Abd
SaO2
N2 sleep but on the cusp of N3
30 seconds

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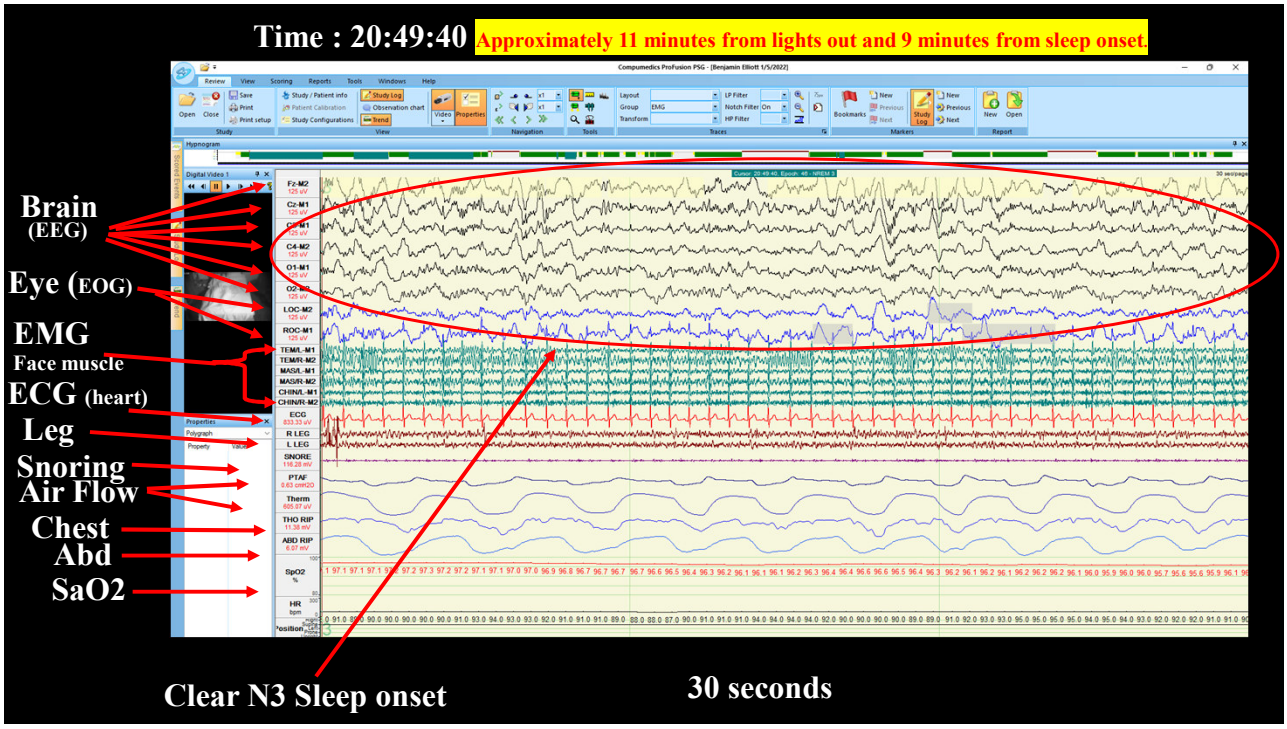
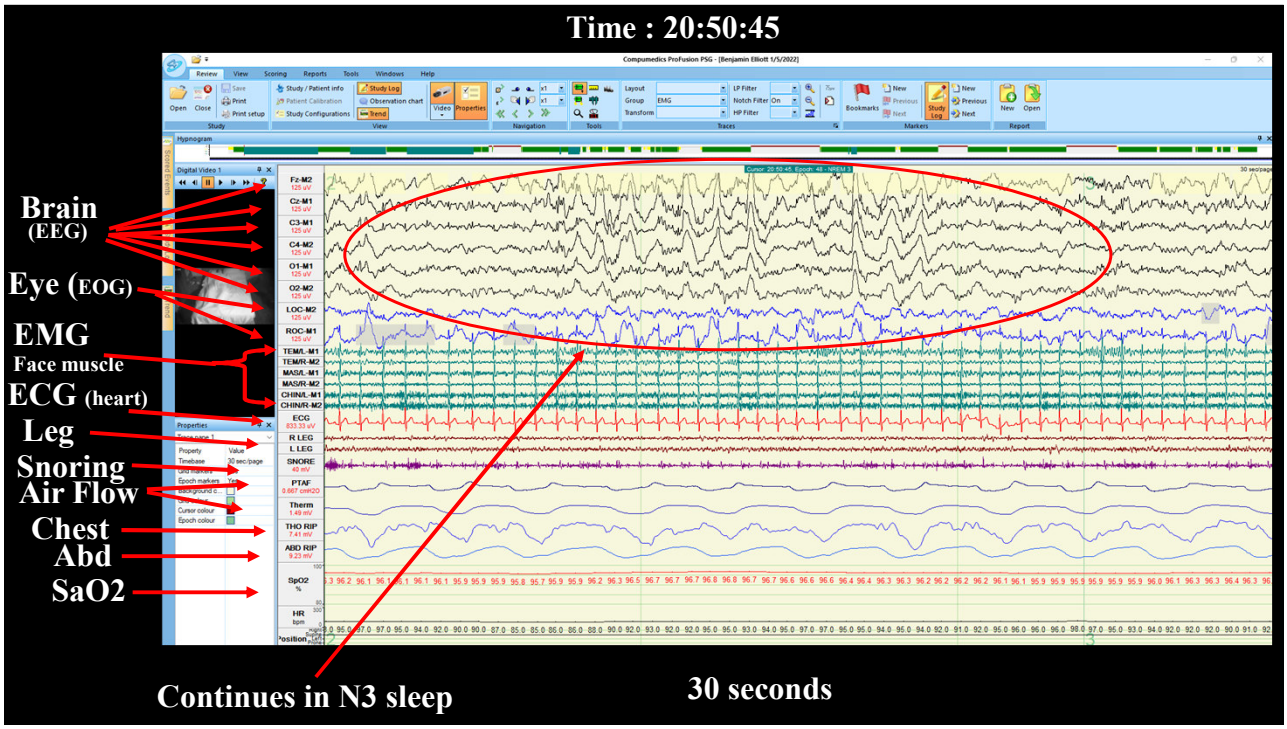
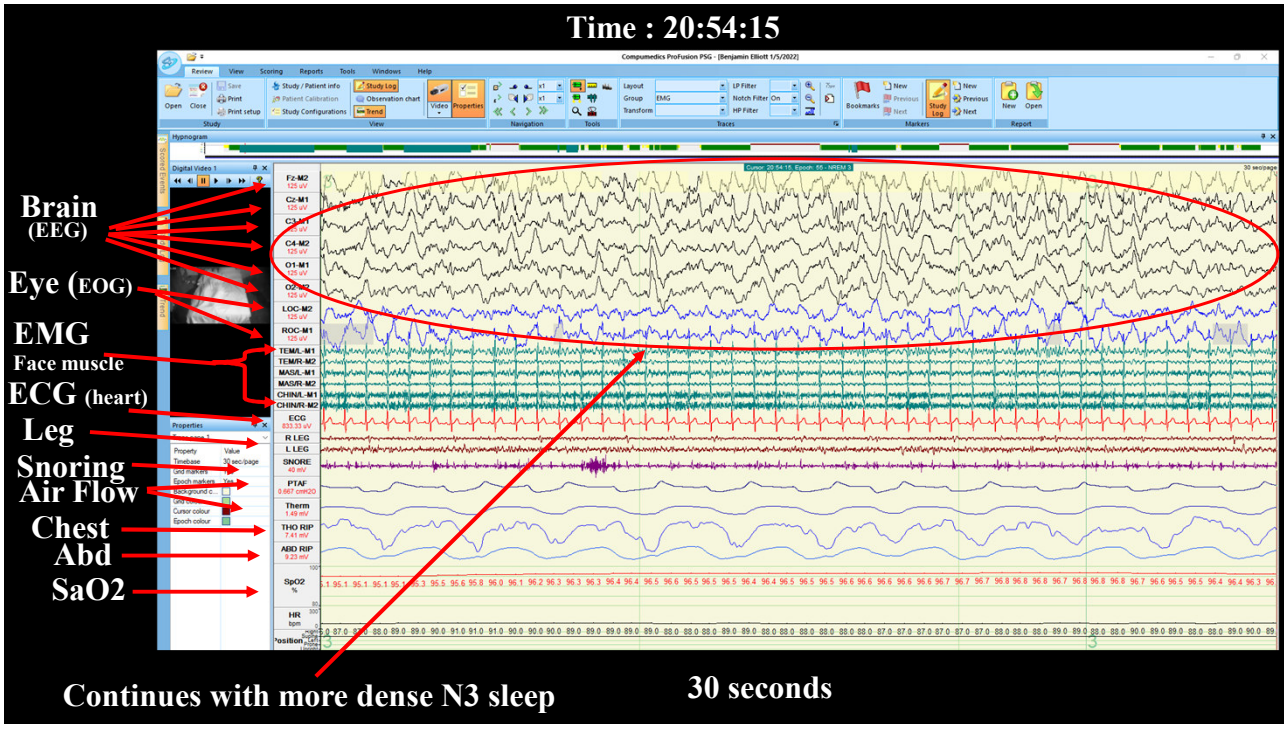

Time : 20:49:40
Approximately 11 minutes from lights out and 9 minutes from sleep onset.
Brain (EEG)
Eye (EOG)
EMG
Face muscle
ECG (heart)
Leg
Snoring
Air Flow
Chest
Abd
SaO2
Clear N3 Sleep onset
30 seconds

28


Time : 20:50:45
Brain (EEG)
Eye (EOG)
EMG
Face muscle
ECG (heart)
Leg
Snoring
Air Flow
Chest
Abd
SaO2
Continues in N3 sleep
30 seconds

29


Time : 20:54:15
Brain (EEG)
Eye (EOG)
EMG
Face muscle
ECG (heart)
Leg
Snoring
Air Flow
Chest
Abd
SaO2
Continues with more dense N3 sleep
30 seconds

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Examples of his Obstructive Sleep Apnea (OSA)

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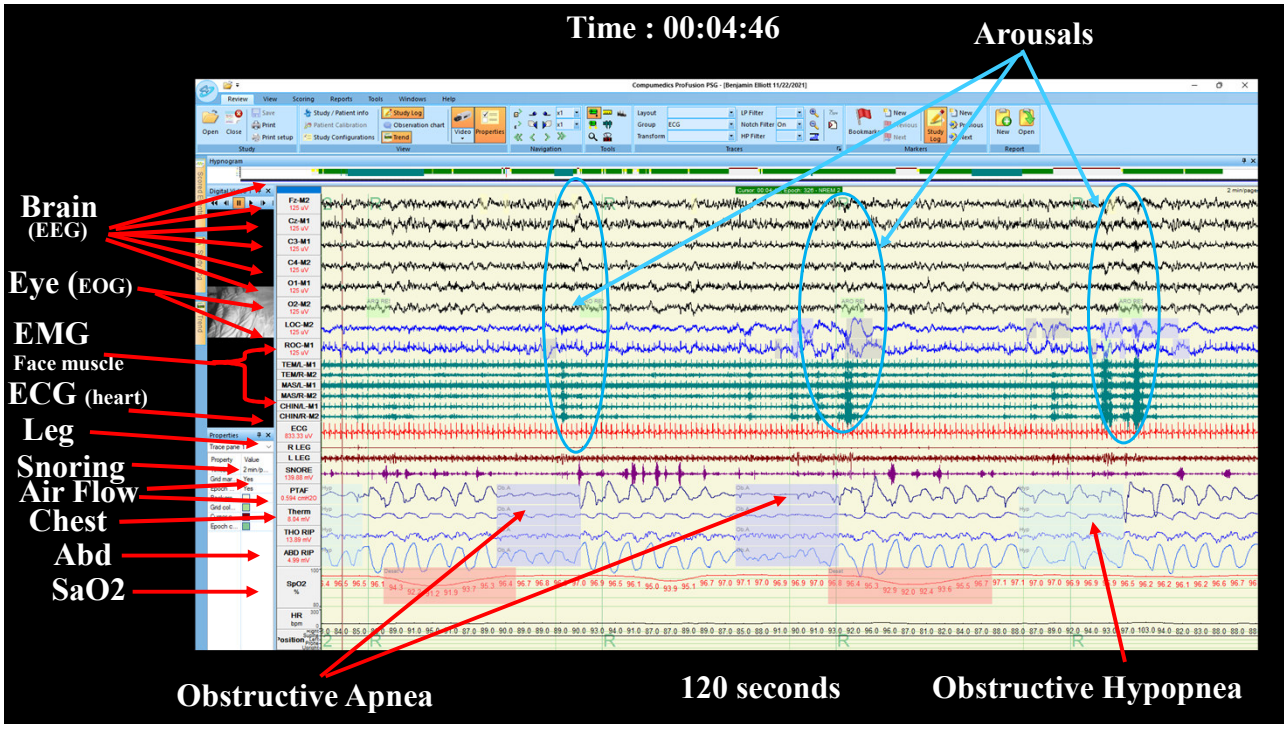

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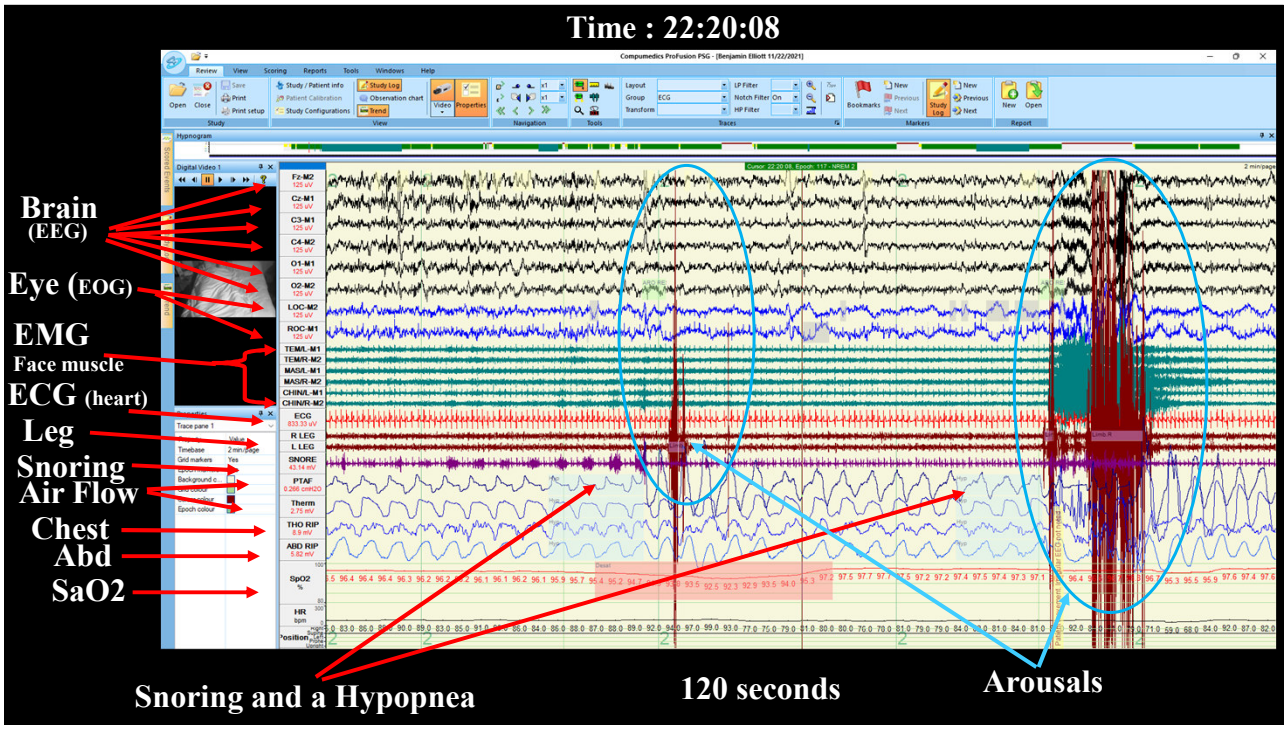
Time : 22:20:08
Brain (EEG)
Eye (EOG)
EMG
Face muscle
ECG (heart)
Leg
Snoring
Air Flow
Chest
Abd
SaO2
Snoring and a Hypopnea
120 seconds
Arousals

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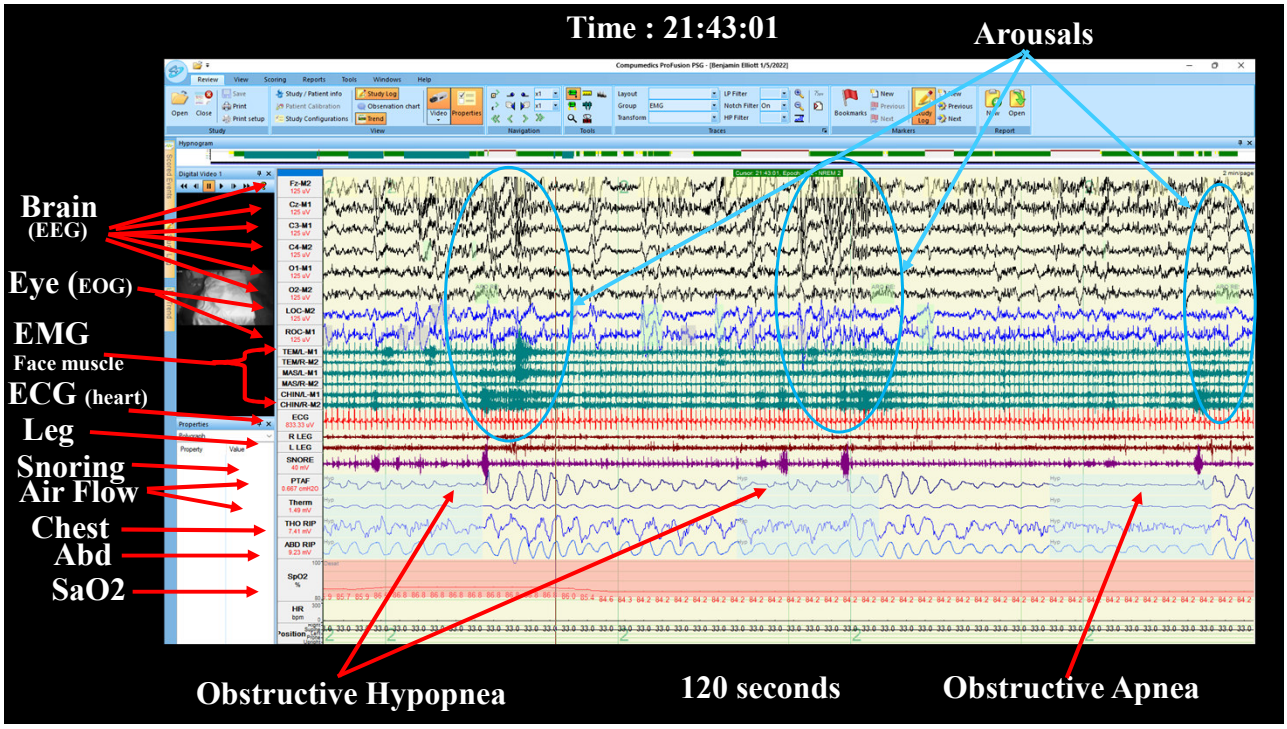
Time : 21:43:01
Arousals
Brain (EEG)
Eye (EOG)
EMG
Face muscle
ECG (heart)
Leg
Snoring
Air Flow
Chest
Abd
SaO2
Obstructive Hypopnea
120 seconds
Obstructive Apnea

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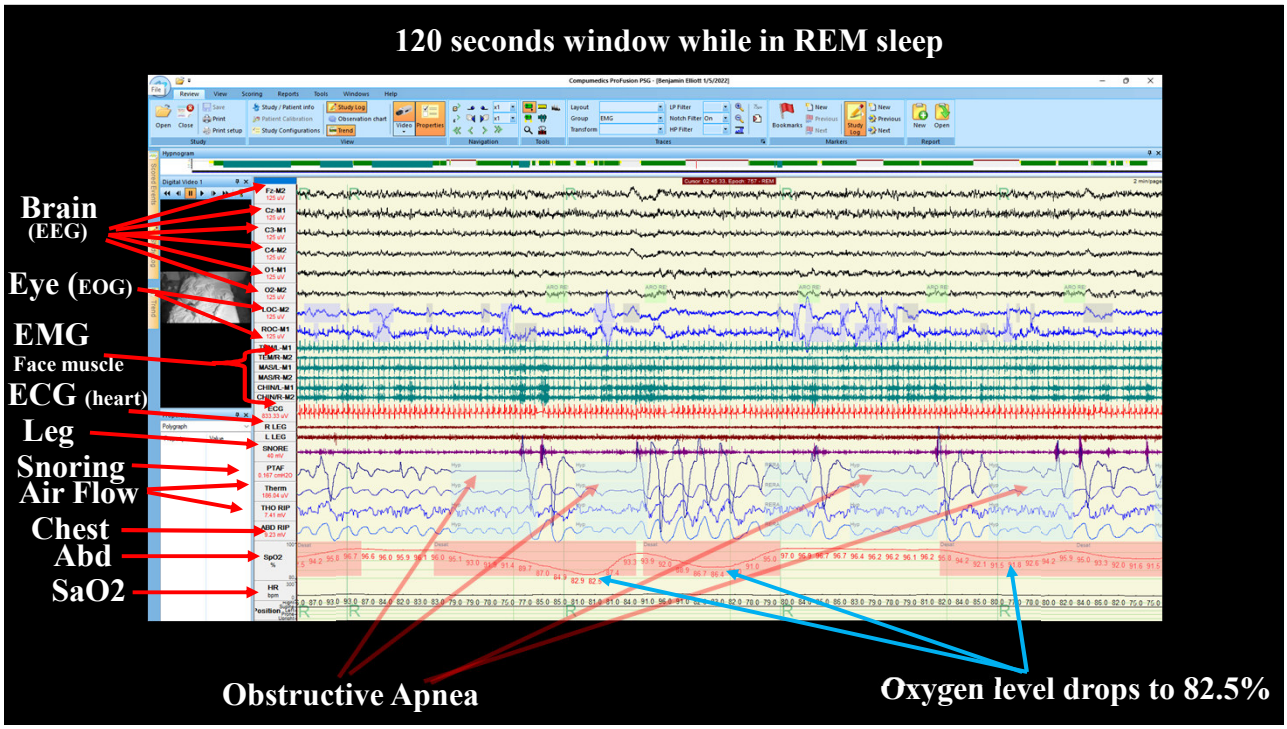
120 seconds window while in REM sleep
Brain (EEG)
Eye (EOG)
EMG
Face muscle
ECG (heart)
Leg
Snoring
Air Flow
Chest
Abd
SaO2
Obstructive Apnea
Oxygen level drops to 82.5%

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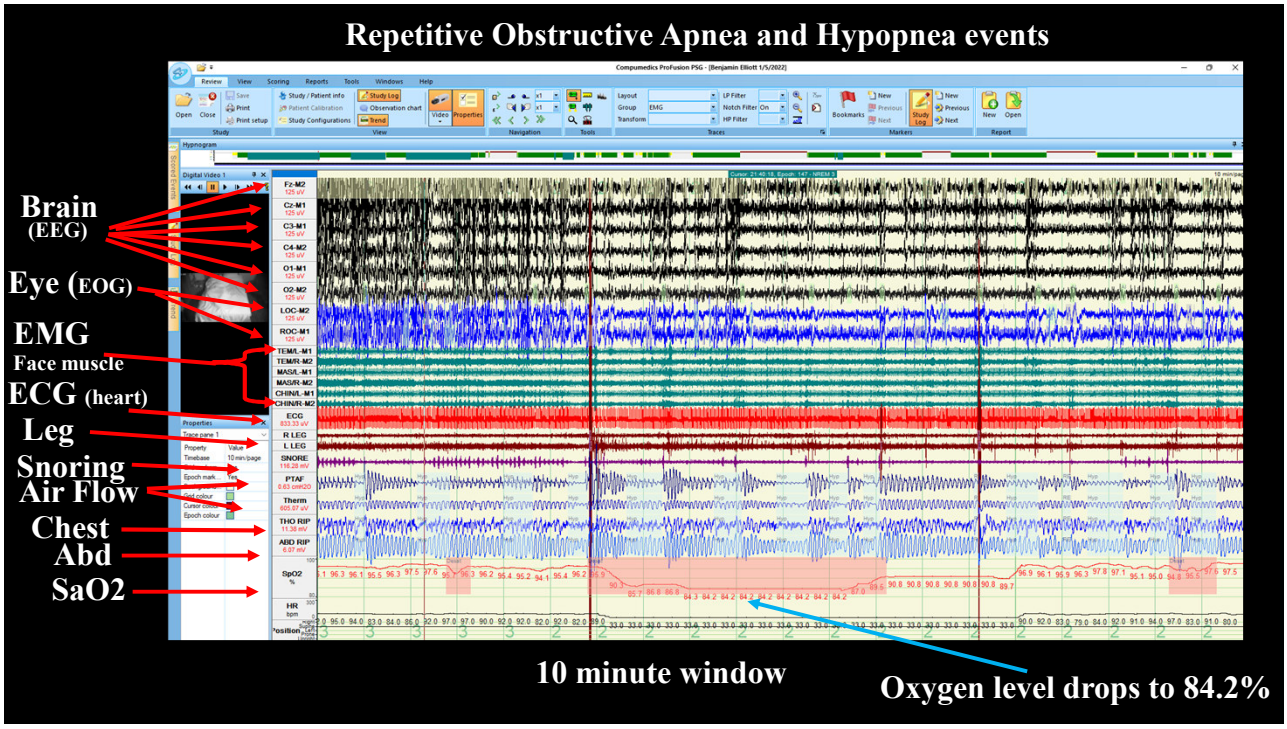
Repetitive Obstructive Apnea and Hypopnea events
Brain (EEG)
Eye (EOG)
EMG
Face muscle
ECG (heart)
Leg
Snoring
Air Flow
Chest
Abd
SaO2
10 minute window
Oxygen level drops to 84.2%

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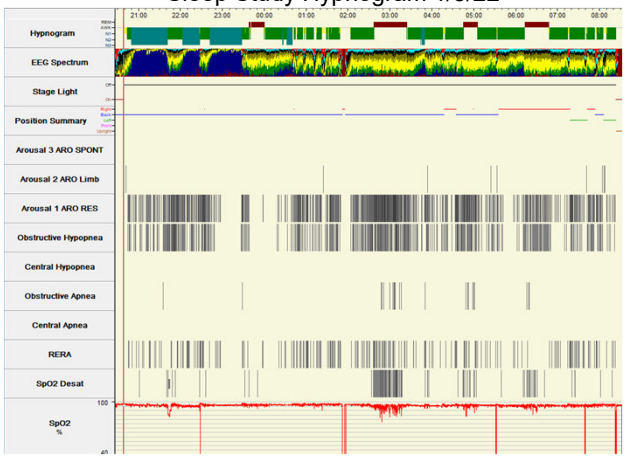
Sleep Study Hypnogram 1/5/22



AHI = 40 / hr
Lowest oxygen level = 77%

% Slow Wave Sleep = 20.2%

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Follow- up since the time of these studies

September 30th 2022 clinic visit.
Wt = 250 lbs BMI = 36.9

Excessive Sleepiness with an Epworth Sleepiness Score of 13 (normal is < 10)

Results of the sleep studies were explained as well as the importance of treating his Obstrcutive Sleep Apnea

No elaborate parasomnias have been noted, however he continues to wrap a blanket around his neck while sleeping.

We started him on Positive Airway Pressure (PAP) to treat his Obstructive Sleep Apnea.

January 13th, 2023 –
Using his CPAP and feels more awake.
Epworth Sleepiness Scale = 6 (normal)

No longer wrapping the blanket around his neck and sleeps in one position now.
More refreshed and no need for naps, with more energy during the day.

We adjusted the pressure on the device slightly to improve his breathing.

April 17th, 2023 – Doing better.
Weight increased to 270 BMI = 40
Epworth Sleepiness Scale Score = 4
No further parasomnias.

July 7th 2023 – Continues to do well.

April 3rd 2024, - continues to do well. Epworth Score = 3.
Wt = 230 lb BMI = 33

Feb 2025 - Phone call follow up
Continues to do well. Not having issues with daytime sleepiness.
Wears his PAP machine every night.
Still no longer wrapping blanket around his neck in his sleep no
No parasomnias noted and continues to sleep lying still.
Doing well in college, received a 4.0 last semester.

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Parasomnias

Definition: Abnormal Behaviors During Sleep

Three Categories:

Non-REM	REM	Nocturnal Seizures
Disorders of Arousal : • **Confusional Arousals** • **Sleepwalking** • **Sleep Terrors**	REM Behavior Disorder	Can occur in any stage of sleep – maybe more likely in non-REM, but NOT sleep stage specific

Non-REM parasomnias can be triggered by:

- Obstructive Sleep Apnea
- Periodic Leg Movements of Sleep
- Medication enhanced parasomnias

Night Terror – a type of non-REM parasomnia
Associated with Post Traumatic Stress Disorder

Parasomnias can not be properly assessed with HSAT.
Polysomnography needs to be done and sometimes epilepsy monitoring.

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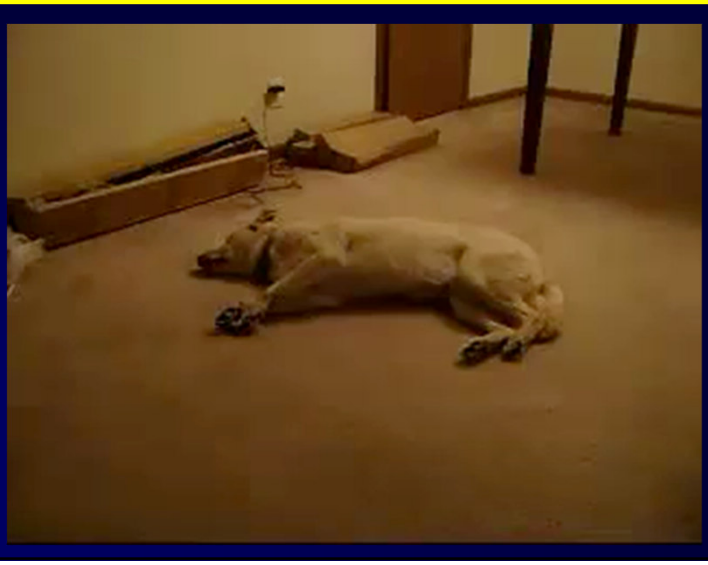
REM Behavior Disorder (RBD)



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0815 Violent Parasomnias In Patients With REM Without Atonia. Parasomnia Overlap Disorder Vs Pure Rem Behavior Disorder

J H Simmons, G J Meskill, M G Lavender

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Abstract

Introduction

REM-Behavior-Disorder (RBD) patients are known for parasomnias causing self-injury. On literature review, harm to others using a weapon is not well established. Some opinions state REM-parasomnias do not consist of elaborate actions, such firing a gun. This has significant ramifications in forensic medicine when RBD is a consideration. We reviewed our RBD patients to identify instances in which a gun was used during a parasomnic event to characterize clinical features associated with such behaviors.

Methods

We reviewed over 57 RBD cases from Texas, between 2014-2017 seeking parasomnias in which a gun was used.

Results

We found two patients in whom a gun was used during a parasomnia, representing < 3.5% of cases. Case-1: 59 y/o F with a 5 year hx of parasomnias of screaming, thrashing, roaming and one instance in which she pointed an unloaded gun at her husband saying she was going to kill him. She had no recollection of the event. NPSG demonstrated REM without atonia, mild OSA (1a AHI of 11/hr) and frequent PLMS. Case-2 presented to a sleep center in 1989 at 33 y/o with 3 year Hx of EDS, found to have mild OSA unresponsive to PAP Tx, then diagnosed with narcolepsy. He later developed cataplexy and progressed to developing parasomnias 15 years later. He demonstrated REM without atonia on a CPAP re-titration NPSG study done in part for his parasomnias, 20 years after original assessment. PLMS were also demonstrated. His parasomnias consisted of yelling, screaming, roaming and one time he woke up finding bullet holes in his closet door with no recollection of firing his gun, which he kept near his bed.

Conclusion

RBD is associated with a wide range of parasomnic events, almost never captured in the laboratory. These patients had clear RBD findings. It is possible they had Parasomnia Overlap Disorder in which Non-REM parasomnias occur in patients with RBD. PLMS and or OSA may contribute by fragmenting sleep. Nonetheless, it is clear that RBD patients can have elaborate parasomnias involving the use of weapons. More attention of this is noteworthy since reports are lacking in the literature.

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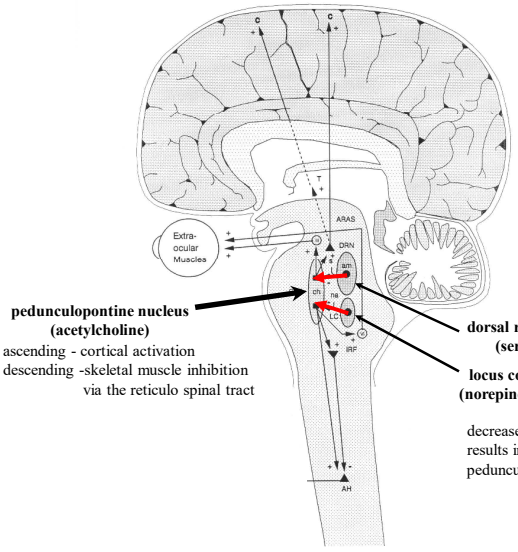
Brainstem regulation and control of REM



pedunculopontine nucleus (acetylcholine)
ascending - cortical activation
descending -skeletal muscle inhibition via the reticulo spinal tract

dorsal raphe nuclei (serotonin)

locus coeruleus (norepinepherine)

decrease firing rate which results in disinhibition of the pedunculopontine nucleus

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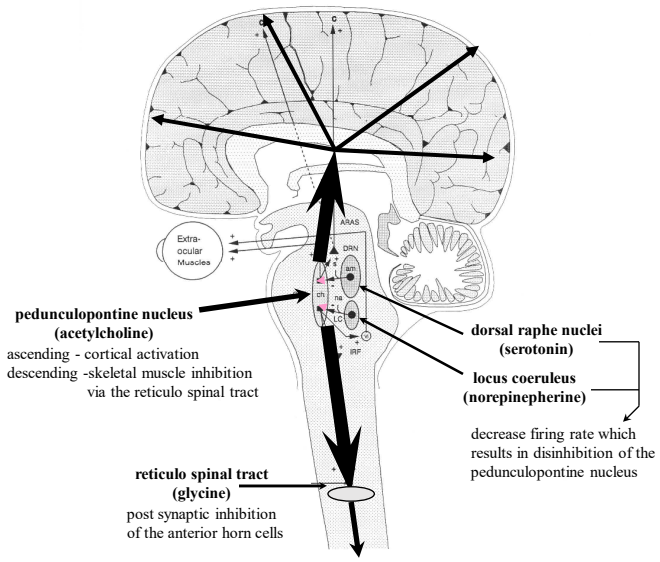
Brainstem regulation and control of REM



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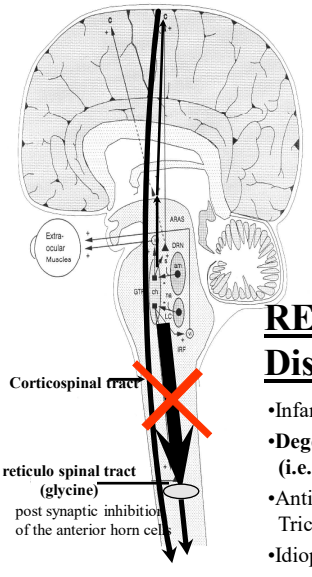
Phasic Activity of REM



REM Behavior Disorder

- Infarcts of the brainstem
- **Degenerative disorders (i.e. Parkinson's Disease**
- Anti cholinergic effects from Tricyclic antidepressants
- Idiopathic

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RBD Becomes Parkinsonism

	-N / Sex -Age RBD Dx -Age RBD Onset	Duration of F/U	Outcome	Update
Schenck 1996	-N=29, 29 M -64.4 (5.8) -55.4 (8.7)	3.7 years after RBD Dx	11 (38%) Park, AD	65% p. 13.3 y
Iranzo 2006	-N=44, 39 M -67.8 (5.3) -60.8 (6.8)	4.1 (2.1) y	20 (45%) PD 9, DLB 6, MSA 1, Dem 4	28 (64%) PD 10, DLB 8, MSA 1, Dem 9
Britton 2009	N=93, 75 M 65.4 (9.3)	4.8 (3.6)	26 (28%) PD 14, MSA 1 DLB 7, AD 4	

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Treatment of RBD

- Treat fragmentors of sleep continuity such as OSA / PLMS
- Safe sleep area
- Melatonin 6-18 mg
- Reduce antidepressant medications if possible and Alcohol (may transiently worsen in alcoholics)
- Clonazepam
  - Other benzodiazepines
- Acetylcholinesterase inhibitors
  - Rivastigmine patch*
  - Donepezil

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REM

REM Behavior Disorder

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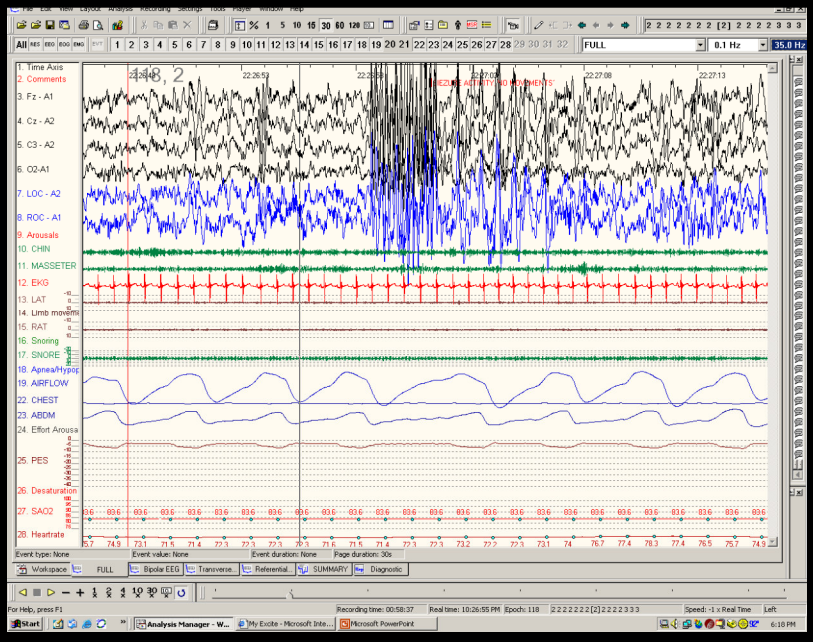

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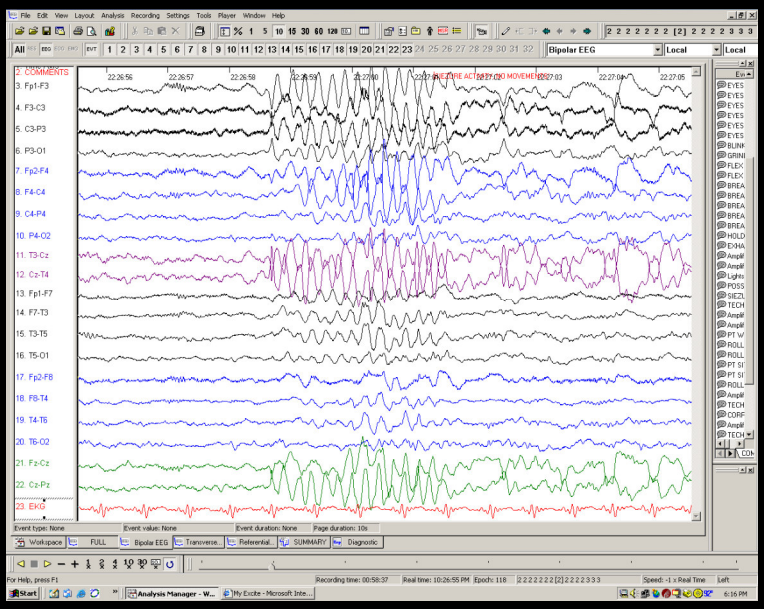
Brief Focal Seizure Activity



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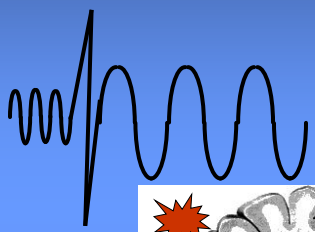
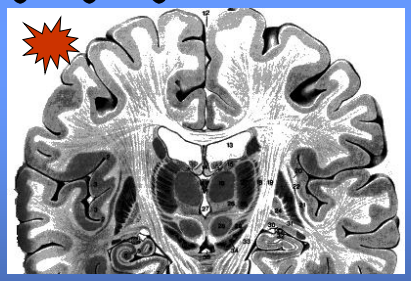
Focal (partial) Seizures
Originate in a localized region of the cortex





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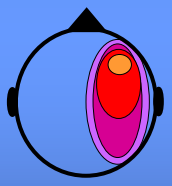
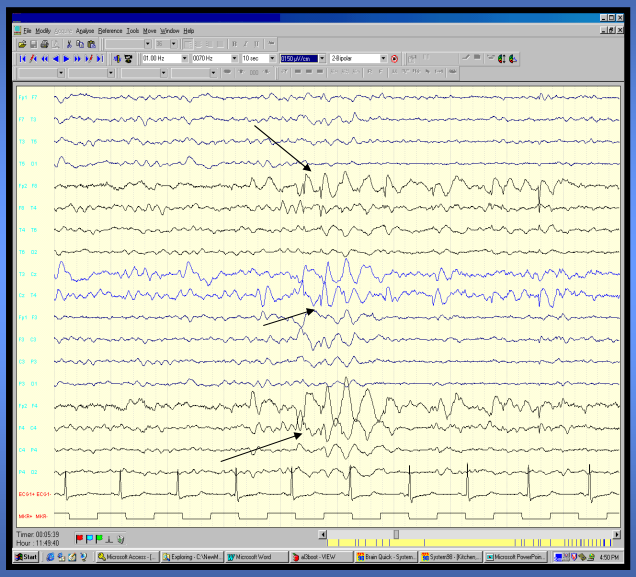
Right Frontal Spike and Waves





NPSG studies typically only have 6 EEG channels
2 Frontal, Central and 2 Occipital

Seizure abnormalities may be missed as a result of this limited EEG configuration.

Standard EEG monitoring consists of 16 or more EEG channels.

Therefore, patient who may have seizures may require a Full EEG montage the night of the NPSG study. Analysis requires a more detailed review, specific for seizure assessment.

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Feature	REM Behavior Disorder (RBD)	NREM Parasomnias (DoA)	Seizure-Related Parasomnias
Prevalence	~0.5% (High in elderly)	High (up to 22% adults)	Rare (1.8/100,000)
Typical Timing	2nd half of night	1st third of night	Throughout night
Key Feature	Dream enactment	Confusion, Sleepwalking	Stereotyped, Clustering
Age Group	Older adults (>50)	Children/Young Adults	All ages

Note: NREM parasomnias are more common in children, while RBD is more common in older adults.

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https://champions.learner.plus/sec/
Non-REM parasomnias can be a triggered by other sleep disorders such as sleep apnea.
What inspired you to reflect?
Pick the context and a clinically relevant concept or phrase that inspired you to reflect.
Reflective Learning Moment
Non-REM parasomnias can be triggered by other sleep disorders such as sleep apnea.
Step 1 of 4
Next

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