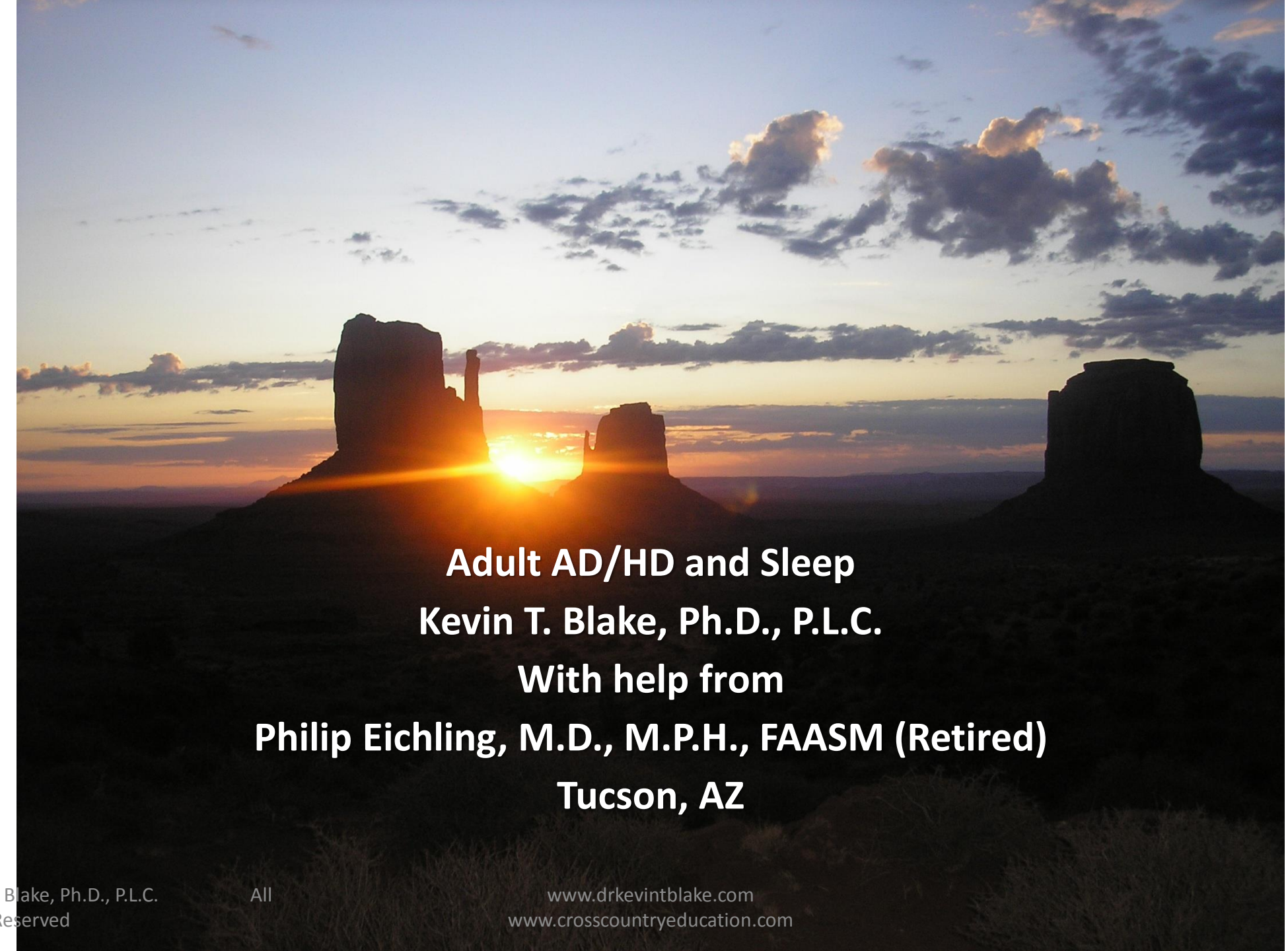


Adult AD/HD and Sleep

Kevin T. Blake, Ph.D., P.L.C.
With help from
Philip Eichling, M.D., M.P.H., FAASM (Retired)
Tucson, AZ

what to take away from this talk:

-ADD and sleep deprivation are very similar

-Anything that makes for sleepiness can look like ADD or make ADD worse i.e. most of the sleep disorders

-this talk reviews:

normal sleep

consequences of sleep deprivation (including ADD)

briefly looks at the common sleep disorders.

21%

Of the US population think they have sleep problems

75% have some problem

45% would ask their doctor about it

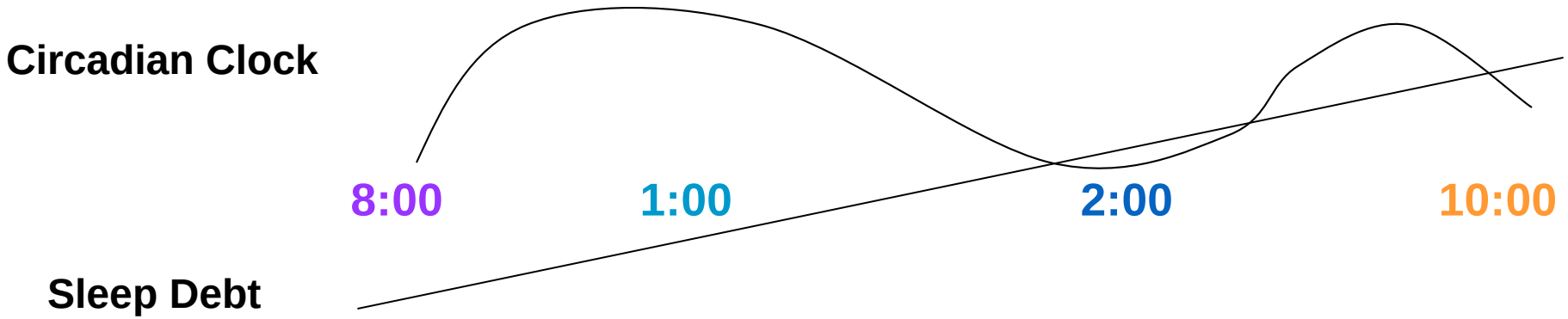
(National Sleep Foundation survey 2005)

And only

3000 board certified sleep specialists

Physiology of Sleep

2 process Model



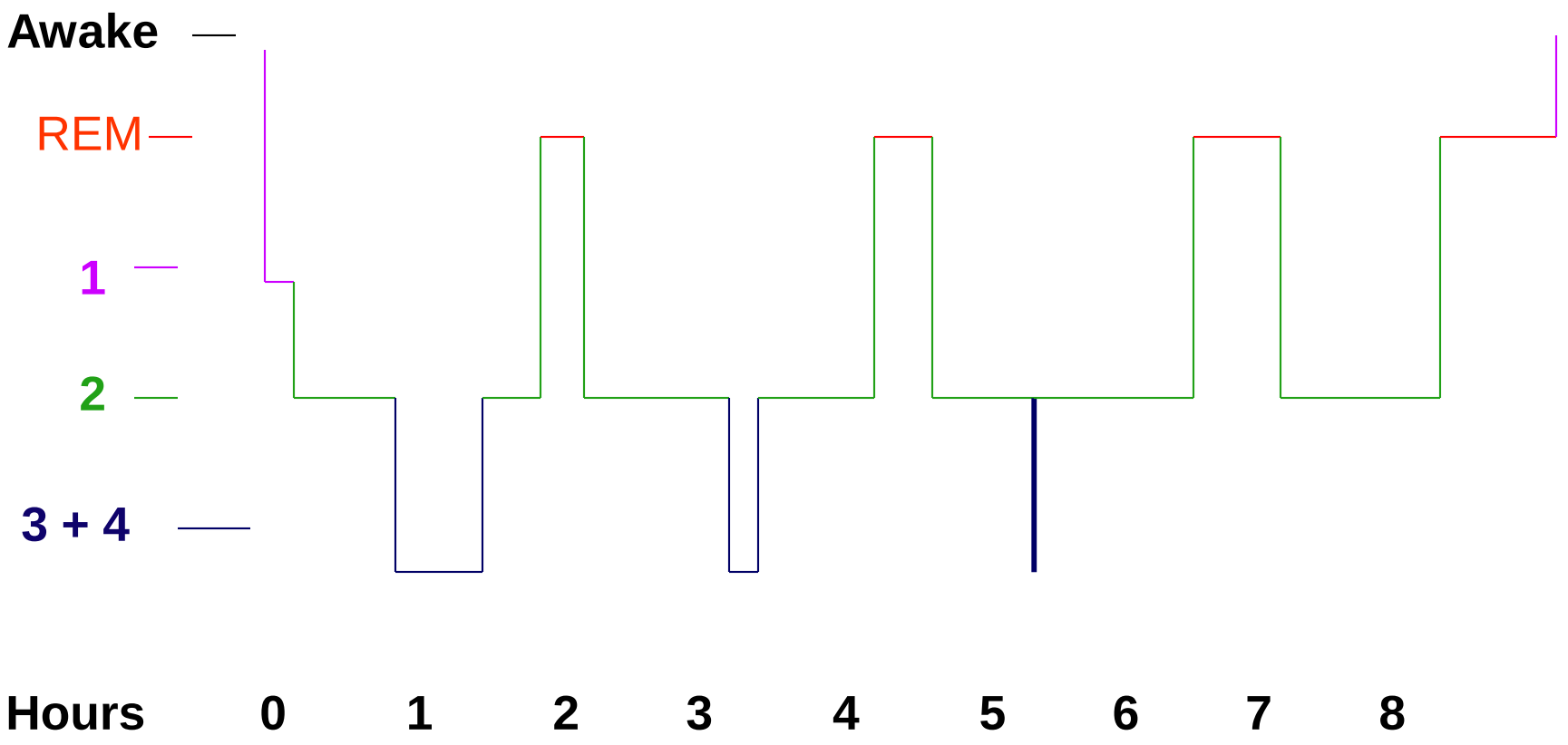
Homeostatic process:

Debt Rises as the Day Goes Along:Adenosine stimulates GABA receptors suppressing dopamine

Circadian process:

SCN stimulates monoamines:- Alertness Varies Cyclically

Normal Sleep Cycles



Common Sleep Disorders

• Inadequate Sleep	Most of Us
• “Phase” Disorder	
• Delayed – Teenager	25%
• Advanced – Elderly	25%
• Sleep Walking/Talking	50% of Kids, 5% of adults
• Insomnia	10-15%
• Sleep Apnea and Snoring	5-10%
• Nocturnal Movement Disorder	
•(Restless Legs)	5-10%
• Narcolepsy	1 in 2000

How Much Sleep Do We Need/ Want?

8 hours, 15 minutes on average

- (Stanford “Sleep Camp” Studies)

Definition of “well rested” is not being able to fall asleep in a darkened room midday

Have We Always Been a Nation of Poor Sleepers?

- Epidemic sleep problems began about 100 years ago with the advent of electricity (Thomas Edison was an insomniac).

- Our great grandparents slept 1 1/2 hours longer than we do!

Epworth Scale

0 = Would never doze

1 = Slight chance of dozing

2 = Moderate chance of dozing

3 = High chance of dozing

Situation	Chance of Dozing
Sitting and reading	_____
Watching Television	_____
Sitting inactive in a public place (i.e. theatre)	_____
As a car passenger for an hour without a break	_____
Lying down to rest in the afternoon	_____
Sitting and talking to someone	_____
Sitting quietly after lunch without alcohol	_____
In a car, while stopping for a few minutes in traffic	_____

It is not "normal" to :

- Fall asleep if reading quietly in the afternoon
- "Drift off" at afternoon meetings
- Sleep on airplanes
- Fall asleep watching TV in the early evenings
- Sleep when you are a passenger in a car
- Need caffeine and open windows to drive 2 hours
- "Drift off" while waiting at red lights

Health Risks of Short Sleep

6 hours vs 7 or 8?? Mixed results

- **1978:** UCLA California general population(40,000)

  40% increased mortality:6 versus 8 hours of sleep

- **2002:** National Cancer survey: Large study

  (1,000,0000) 6-7 hours lower mortality than 8-9 hours

- **2004:** Japanese study (100,000) 7 hours "better"

  than 8 hours

- **2007**: Finland study 22 yr follow-up (21,000)

  <7 26% higher mortality for men, 21% for women

  >8 24% " " " 17% " "

- 2007: UK (10,000) < 6 24% higher mortality, reducing sleep

  from baseline by 1 hour doubles risk

Multiple studies: 5 hrs or less/ 9 or more= higher mortality

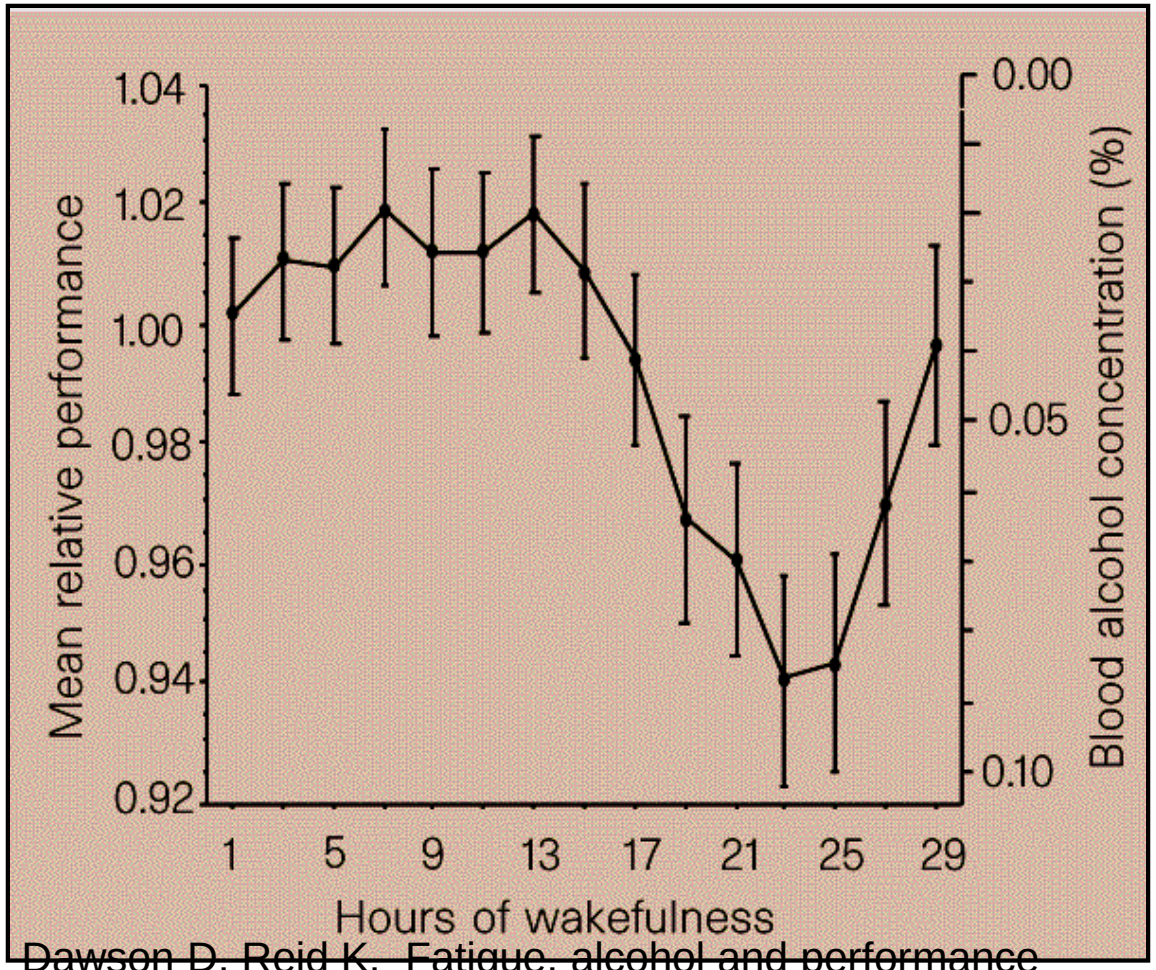
Consequences of Poor Sleep:

Sleepiness!

Sleepiness Disability

Is like alcohol impairment

Comparison of Deterioration in Performance: Hours of Wakefulness versus Comparable Blood Alcohol Concentration



Dawson D, Reid K. Fatigue, alcohol and performance impairment. Nature 1997;388:235.

Disability of Sleeplessness

Simple sleepiness doesn't kill you unless:

You are behind the wheel of a car

New Jersey Law: Driving after being awake >20 hours is "reckless driving" felony. Equivalent to blood alcohol level of .09

Automobile Accidents and Emergency Medicine Residents and Physicians

Prevalence Rates[1] During EM Residency for:

- Collision frequency 8% (74% post night shift)
- Near miss frequency 58% (80% post night shift)
- Correlated with:
  - numbers of night shifts worked
  - resident's self reported tolerance of shift work
  - self reported adaptation to drowsiness

1 Steele MT, The occupational risk of motor vehicle collisions for emergency medicine residents. Acad Emer Med 1999, 6:1050

Dangers of Sleeplessness

Auto Accidents – Bigger than Alcohol
Major Disasters – Exxon Valdez
Chernobyl
Challenger
Most Airplane Crashes

✈ PILOTS ARE HAVING 'MICRO SLEEPS' ✈ WITHIN MINUTES OF LANDING!

Consequences of Poor Sleep

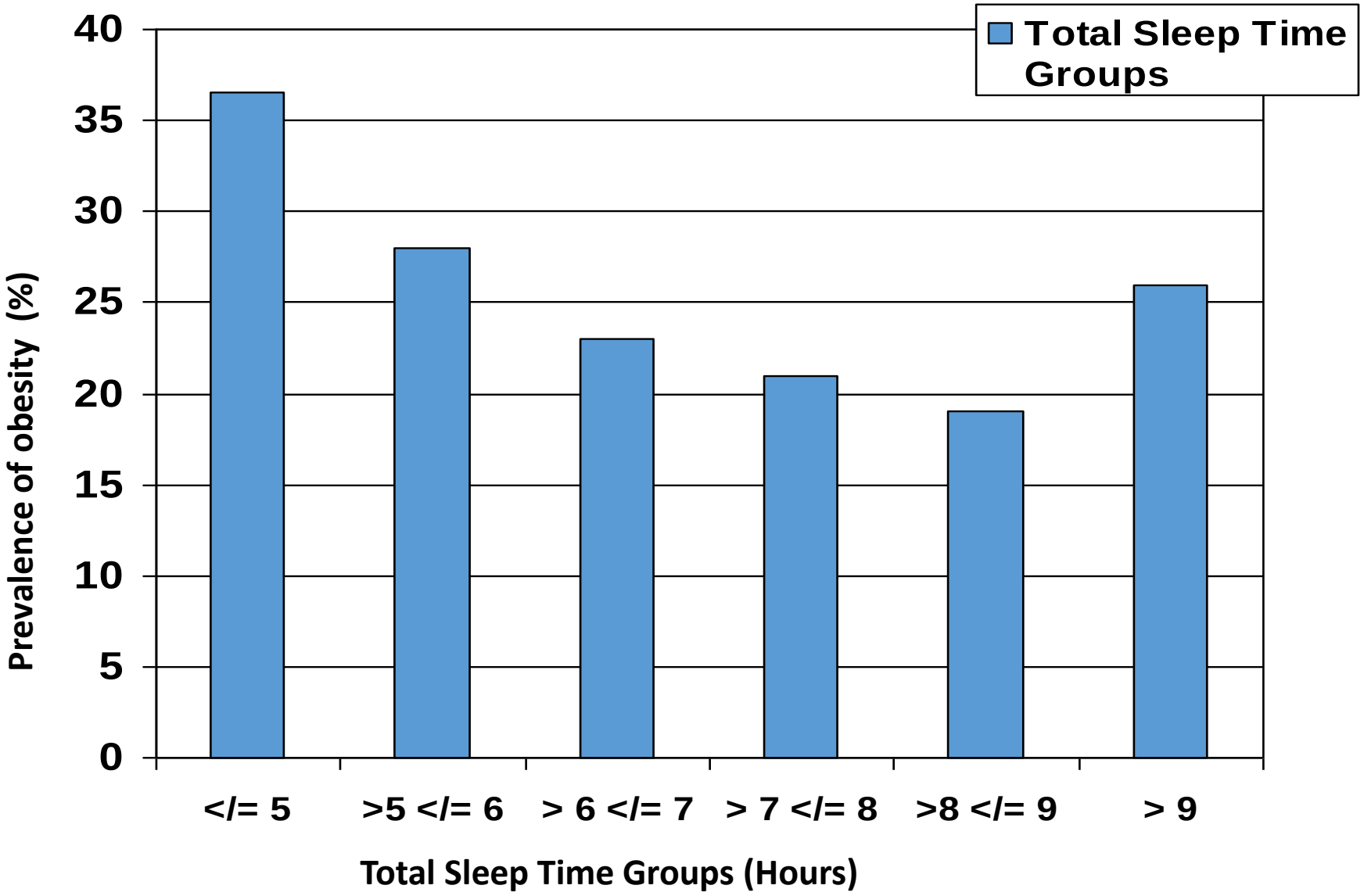
Hunger

Sleep Loss

At least 5 different brain sleep chemicals are also hunger chemicals

- Cortisol (stress chemical)
- Neuropeptide Y (carbo. Hunger)
- Hypocretin/Orexin (Narcolepsy)
- Gallanin (fat hunger)
- Ghrelin (acute hunger chemical)

Obesity and Sleep



Singh M, et al, Journal of Clinical Sleep Medicine, 2005

Consequences of Poor Sleep

Increased Pain

- Fibromyalgia
- Worse arthritis
- All pain conditions are worse

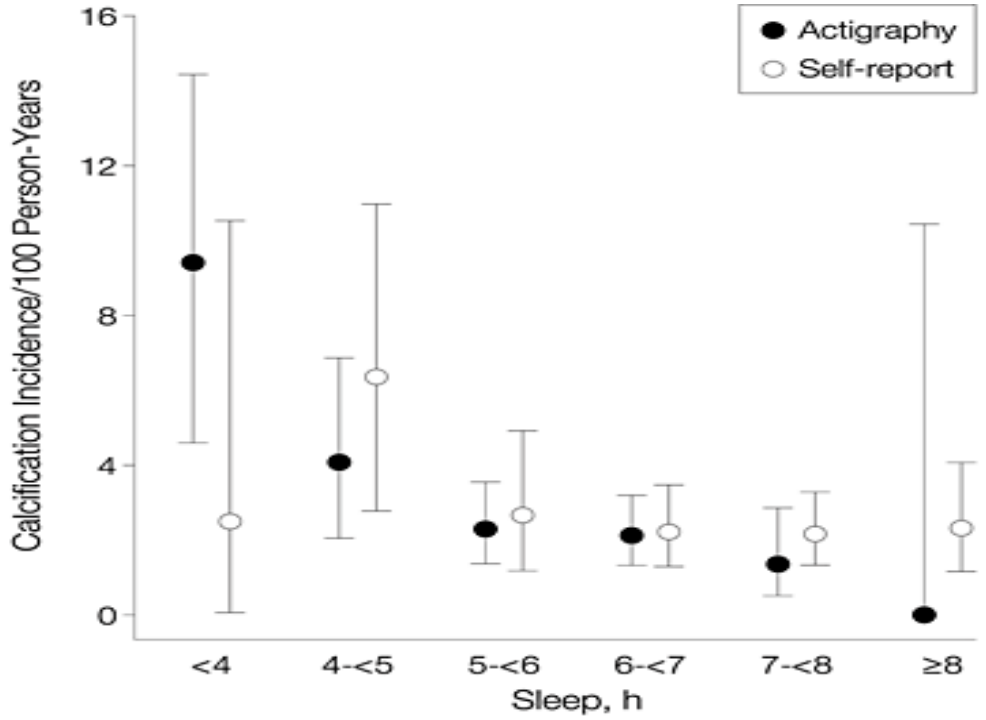
CONSEQUENCES OF POOR SLEEP:

CARDIOVASCULAR MORTALITY

Coronary Calcifications and Mean Sleep Duration

King, C. R. et al. JAMA 2008;300:2859-2866.

- Average age= 40. N=495
- Each hour of more sleep=33% reduction in disease, equal to 16 mm drop in BP



No. of participants						
Actigraphy	17	49	148	188	88	5
Self-report	8	22	60	144	175	83

Consequences of Poor Sleep:

Cognitive Function

Negative Influences of Executive Function

- **"People with ADHD, depression, learning disabilities, and autism often have difficulties with executive function. Alzheimer's disease or brain damage (for example from concussion or stroke) can also affect executive function. Some research has found an association between OCD and problems with executive function.**
- **People with no executive function impairment can experience temporary problems. For example, being overly stressed, sad, or sleep-deprived can hinder a person's executive function ability".***

--American Psychiatric Association (January 19, 2017)*; Diamond (September, 27, 2012)

Author (January 19, 2017).* Executive Function of the Brain: Key to Organizing, Managing Time and More. American Psychiatric Association, Washington, DC from Website: https://www.psychiatry.org/news-room/apa-blogs/apa-blog/2017/01/executive-function-of-the-brain-key-to-organizing-managing-time-and-more.

Diamond, A. (September 27, 2012). Executive Functions. Annual Review of Psychology. DOI: 10.1146/annurev-psych-113011-143750.

Diamond's Literature Review of EF

- Good EF in childhood-Typically will have it through life
- EF can be taught throughout life and practice can improve it
- Predicts: achievement, quality of life, physical and financial health
- Fluid Intelligence (decision making/problem solving) can be taught and practice can improve it
- Interference Control (selective attention/inhibition) may be the part of EF that protects what is in working memory
- Sleepiness, loneliness, and lack of fitness can hurt executive function

Diamond, A. (September 27, 2012). Executive Functions. Annual Review of Psychology. DOI: 10.1146/annurev-psych-113011-143750.

Interventions for Executive Dysfunction

- **Healthy Living:**
  - **Good sleep every night**
  - **Good diet; no excesses**
  - **Weekly exercise plan-possibly develop with physician's help**
  - **Allow for rest and relaxation-learn relaxation technique (automatize)**
  - **Monitor mood; if bad 2 weeks get help**

- **Adaptive Thinking:**
  - **Monitor & chart negative and positive self-talk**
  - **Learn to counter negative self-talk with positive**
  - **Practice relaxation technique**
  - **Automatize**

Jennings, A., and Nguyen, C. (September 5, 2014). STRATEGIES FOR IMPROVING EXECUTIVE FUNCTIONING SKILLS: A MODEL FOR THERAPEUTIC INTERVENTION. Paper presented at the 3rd Annual Conference on ADHD and Executive Function, Sheraton Station Square, Pittsburg, PA, September 5th, 2014.

Two General Memory Systems

- ***Declarative Memory***: **Remembering the what, i.e. Facts and Events**
- ***Procedural Memory:*** **Knowing how to do something**
- **Proficient Reading is a skill and is a product of procedural memory.**
- **With procedural memory robust gains in knowledge are made after training is terminated.**
- **Train until the person's new behavior plateaus, stop training then allow to sleep. The next day they will have improved behavior and less errors.**

Two Memory Systems (Continued)

- **This will not happen if the person is not allowed to sleep and/or if they are then taught a competing task.**
- **If the training situation is considered novel, learning will continue to increase.**

Karni, A. (November 3, 2004). Brain Basis of Skill Acquisition and Learning: How do They Relate to Reading? Paper presented during the Neural Basis of Reading and Other Forms of Skills Acquisition Symposium of the 55th Annual International Dyslexia Association Conference, Philadelphia, PA, Session W-1.

Karni, A., Tanne, D., Rubenstein, B.S., Askensay, JJ., and Saji, D. (1994). Dependence on REM Sleep of Overnight Improvement of A Perceptual Skill. Science, 265 (5172), pp. 679682.

Sleep and Memory

- "…sleep allows us to process and retain new memories and skills." (p. 58)
- Deprive sleep/block training improvement in skill
- "Evidence for sleep's effect on declarative memory is much weaker than its effect on procedural memory." (p. 59)

Stickgold, R. (2005). Sleep-Dependent Memory Consolidation. Nature, 437 (7063), pp. 1272-1278.

Winerman, L. (January, 2006). Let's Sleep On It. Monitor On Psycholoy, 37 (1), pp. 58-60.

Nguyem, N.D. et al. (July 1, 2013). Overnight Sleep Enhances Hippocampus-Dependent Aspects of Spatial Memory Sleep. 36(7), 1051-1057. DOI: https://doi.org/10.5665/sleep.2808.

Sleep Disorders and AD/HD

- 30 to 56% of those with AD/HD have sleep disorders
- Stimulant medications can lengthen sleep onset
- Sleep problems may exacerbate academic/work problems, but if academic/work problems not caused by Sleep problem, better sleep may not translate to fewer waking problems.
- Significantly more problems with restless legs, etc.

Barkley, R.A. (2012). ADHD: Cutting Edge Understanding and Management. Seminar sponsored by J&K Seminars, L.L.C., 1861 Wickersham Lane, Lancaster, PA 17603-2327, p. 28.

Bajorvatn, B. et al. (September 20, 2017). Adults with Attention Deficit Hyperactivity Disorder Report High Symptom Levels of Troubled Sleep, Restless Legs, and Cataplexy. Frontiers in Science. DOI: 10.3389/fpsyg.2017.01621.

Diaz-Roman, A. et al. (June, 2018). Sleep in adults with ADHD: Systematic review and meta-analysis of subjective and objective studies. Neuroscience and Biobehavioral Reviews. 89, 61-71. DOI: 10.1016/j.neubiorev.2018.02.014.

Attention Deficit Disorder

- Poor attentiveness
- Unable to do long term planning – prioritize (integrative function of prefrontal cortex)
- Unable to deal with complicated new problems
- Overconfidence (unable to judge impairment)
- Clumsiness
- Working Memory Problems

ADD

Executive function affected by sleepiness

Is ADD just a sleepy brain?

- Probably not, but sleepy people look very ADD like
- Sleepy young adults have same prefontal cortex testing abnormalities as normal elderly.
- Is a normal aging brain simply a sleepy one?

Harrison Y, Sleep 2000

Executive Function

Prefrontal Cortex is metabolically susceptible to sleep deprivation (functional MRI studies)

Nofzinger Seminars in Neurol 2005

PFC controls goal directed behavior

- prioritization
- self organization and planning
- judgment re adequacy of outcomes

Requires attention to novel situations

- Sleep deprivation affects PFC integrative functions

AD/HD & Sleep

- **People with AD/HD:**
  - **Up to 39% sleep walk**
  - **56% have trouble going to sleep**
  - **Have fewer sleep hours than non-AD/HD children**
  - **Have more movement during sleep**
  - **Have more periods of sleepiness during the day**

--Barkley (2006)

- **Stimulant medications can lengthen sleep onset**
- **Sleep problems may exacerbate academic/work problems, but if academic/work problems not caused by Sleep problem, better sleep may not translate to fewer waking problems.**

--Barkley (2012)

Solar Intensity, Circadian Rhythms, & AD/HD

"In this study we found a lower prevalence of ADHD in areas with high SI for both U.S. and non-U.S. data. This association has not been reported before in the literature. The preventative effect of high SI might be related to an improvement of circadian clock disturbances, which have recently been associated with ADHD. These findings likely apply to a substantial subgroup of ADHD patients and have major implications in our understanding of the etiology and possibly prevention of ADHD by medical professionals, schools, parents, and manufacturers of mobile devices."

--Arns, van der Heijden, Arnold, and Kenemans (March 25, 2013)

"Cortisol rhythms were significantly phase delayed in the ADHD group. These findings indicate that adult ADHD is accompanied by significant changes in the circadian system, which in turn may lead to decreased sleep duration and quality in the condition. Further, modulation of circadian rhythms may represent a novel therapeutic avenue in the management of ADHD" (p. 988).

--Baird, Coogan, Siddiqui, Doney, Thorne (October 17, 2012)

Exercise and AD/HD

- After 20 minutes of exercise AD/HD children:
  - Greater response accuracy
  - Better regulation
  - Seated longer
  - Duration of reading
  - Better reading and math
  - Better inhibitory control
  - Sign. Bigger than controls

Pontifex, M.B. et al. (March, 2013). Exercise Improves Behavioral, Neurocognitive, and Scholastic Performance in Children with Attention-Deficit/Hyperactivity Disorder. Journal of Pediatrics, 162(3), 543-551.

- Have children with ADHD take their toughest classes in the morning after aerobic exercise.
- After the more difficult class take fun/easier class.
- If they have a choice to cram 20 extra minutes for an exam or exercise 20 minutes, it would be better to exercise.

LaCount, P. et al. (August, 2018). Physical Exercise Interventions for Emerging Adults with Attention-Deficit/Hyperactivity Disorder (ADHD). ADHD Report, 26(5), 1-11.

Mindfulness Training and AD/HD

"Our study shows preliminary evidence for the effectiveness of mindfulness for children with ADHD and their parents, as rated by parents. However, in the absence of substantial effects on teacher-ratings, we cannot ascertain effects are due to specific treatment procedures." (p. 139)

Van der Oord, S. Bogels, S.M. And Peijnenburg, D. (February, 2012). The Effectiveness ofMindfulness Training for Children with ADHD and Mindful Parenting for their Parents. Journal of Child and Family Studies, 21(1), 139-147. From website: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3267931/.

Mindfulness Training and AD/HD

Dutch researchers found 24 adult with AD/HD that were taught mindfulness reported better EF, a reduction in AD/HD symptoms, better self-respect and mental health. These were seen as initial results and they suggested more research to demonstrate efficacy.

Jansen, L. et al. (February 28, 2018). Mindfulness-based cognitive therapy v. treatment as usual in adults with ADHD: a multicentre, single-blind, randomised controlled trial. Psychological Medicine. DOI: 10.1017/S0033291718000429.

Chinese scientists compared a group of college students with AD/HD that received a treatment of mindfulness and cognitive behavioral therapy to a wait list control group of students with AD/HD. The treatment group showed more of a normalization in response time and made fewer impulsive errors. They also had better sustained attention.

Gu Y. et al. (December 1, 2016). A Randomized Controlled Trial of Mindfulness-Based Cognitive Therapy for College Students With ADHD. Journal of Attention Disorders. DOI: 10.1177/1087054716686183.

AD/HD and Sleep Disorders

- Hart reported 80% of those with AD/HD have some problems with sleep.
- Duane indicated there is a higher rate of Sleep Disorders in those with AD/HD than the general population.

(Hart, C.E. (December, 2001). Don't Loose Sleep Over It! AD/HD and Sleep Problems. Attention!, 8 (3), pp .24-27.)

(Duane, D. (1993). Alertness: Vigilance and Wakefulness in Developmental Disorders of Reading and Attention. Annals of the New York Academy of Sciences, 62, p. 333-334.)

AD/HD and Sleep Disorders

"Importantly, it appears that much of these behavioral problems surrounding children's bedtime are more a function of the disorders often comorbid with ADHD (ODD, anxiety disorders) than to ADHD" (p. 124).

(Barkley, R.A. (1998). Attention Deficit Hyperactivity Disorder, Second Edition. New York, NY: Guilford, p. 124.)

AD/HD and Sleep Disorders

- Asthma can cause sleep problems which can result in problems in attention in those without AD/HD.
- Sleep deprivation can cause AD/HD-like symptoms.

(Finn, R. (March, 2003). Asthma Associated with Sleep , Attention Problems in Children. Clinical Psychiatry News, p. 53.)

(Finn, R. (March, 2003). Sleep Deprivation in Normal Kids Leads to ADHD Symptoms. Clinical Psychiatry News, p. 53.)

Sleep Disorders and AD/HD

"As the researchers expected, participants performed more poorly on the math task when they were sleep deprived than when they were rested. And consistent with the notion that sleep deprivation impairs working-memory functioning in the prefrontal cortex while participants were performing the math task after sleep deprivation than after a normal night's sleep" (p. 56).

(Caprenter, S. (October, 2001). How Does the Brain Catch Up? Monitor On Psychology, 32 (9), p. 46.)

AD/HD and Sleep Disorders

"Many researchers have noted that sleep-deprived teenagers appear to be especially vulnerable to psychopathologies such as depression and ADHD, and to have difficulty controlling their emotions and impulses" (p. 44-45).

(Carpenter, Carpenter, S. (October, 2001). Sleep Deprivation May be Undermining Teen Health. Monitor On Psychology, 32 (9), pp. 42-45.)

AD/HD & Thyroid Disorder

Resistance to Thyroid Hormone (RTH):

- Usually autosomal dominant trait caused by one gene
- Rare disorder; usually show LD and cognitive difficulties
- AD/HD in RTH patients usually subclinical
- Liothyronine may be helpful with such patients

(Barkley, R.A. (1998). Attention Deficit Hyperactivity Disorder, Second Edition. New York, NY: Guilford, p. 173.)

ADD and Sleepiness

Up to ½ of all ADD children have RLS

¼ of ADD patients in one study had sleep apnea

- (Luen, D., Sleep 2004)

Treatment with dopminergics lowered ADD scores: estimate would treat 12% of all ADHD children

(Cortese Sleep 2005)

Snoring in children predicts ADHD development in 4 year prospective study OR 4.5

(Chervin, Sleep 2003)

Hypersomnia and ADHD

Study comparing 74 hypersomnia pts (narcolepsy and idiopathic hypersomnia) to 61 ADHD pts. Administered ADHD scales and Epworths:

18% of hypersomnia pts met ADHD criteria

16% narcoleptics and 42% IH

54% ADHD had Epworth >12

Oosterloo. Sleep 2005; 28: A308

Neurobehavioral and Cognitive Effects
ADHD Like Effects: Acute Sleep Deprivation

- **Attentiveness**

- Diminished vigilance

-Continuous performance tasks: instability of attention increased number of errors of omission and commission

- “fatigability” : Rapid deterioration of performance or for tasks requiring sustained attention

-Cognitive slowing on subject-paced tasks

-Increased cognitive errors with increased time pressure (in work-paced tasks) sacrifice speed for dexterity

-Increased compensatory effort required to maintain behavioral effectiveness

(Dinges D, *Clin psychiatry news 2002:5-7)*

Neurobehavioral and Cognitive Effects continued

- Poor integrative functions
  - Reduced learning (acquisition) of cognitive tasks
  - Poor prioritization skills (loss of situational awareness)
  - Increased perseveration on ineffective solutions
  - Neglect of nonessential activities
- Memory changes: decline in both short-term recall and working memory

Dinges D, Psychiatry News 2002:5-7

Neurobehavioral Function in ADHD

25 ADHD, 25 Controls:

Actigraphy testing for sleep time and quality showed no differences in the groups at baseline, i.e. each group got same amount of sleep and the ADHD group showed poorer functioning.

	Control (n=25) Mean +/- SD	ADHD (n=24) Mean +/- SD	F	P
SRT	421.04 +/- 59.2	507.78 +/- 97	11.86	***
Digit Span FW	4.63 +/- 0.82	5 +/- 0.9	3.73	+
Digit Span BW	3.75 +/- 1.07	3.52 +/- 0.9	.36	NS
SD-RT	3448.5 +/- 1094	3932.1 +/- 674	4	*
CPT-RT	685.29 +/- 64.73	732.17 +/- 60	4.65	*
CPT-Om Err	2.5 +/- 2.19	3.5 +/- 2.5	4.65	*
CPT-Com Err	1.38 +/- 2.87	3.33 +/- 2.8	2.2	NS

ADHD refers to attention-deficit/ hyperactivity disorder; Tapping, number of finger tapping; SRT, Simple Reaction Time, FW, Forward; BW, Backward; SD, Symbol Digit; RT, Reaction Time; CPT, Continuous Performance Test; OM Err, omission error; Com Err, commission errors.

+ marginal, *P<.05; **P<.01; ***P<.005.

Gruber, R. Sleep, 2004

Then, both groups exposed to Reduced sleep:

Reduced sleep in Control Group correlated with worsening in:

- Reaction time
- CPT (continuous performance tasks), omission errors.
- Digit symbol substitution test.

No change is noted in ADHD patients.

- ADHD patients do not necessarily get better with improved sleep
- Controls display ADHD-like impairment when sleep deprived that improves with sleep.

ADD and Sleep Deprivation

Similarities

Hypoarousable states

Poor attention (vigilance)

Working memory impairment.

Impaired integrative executive function

Possibly increased impulsivity and irritability

Differences

ADD not characterized by microsleeps

Reaction times may be more impaired by SD

Sleep improves SD but not ADD!

Unkown:

- Does SD make ADD worse?
- Can exec function in SD respond to stimulation better than ADD? i.e. in critical situations

Significance for Sleep Med/Psych:

- Adult ADD is a popular diagnosis and Sleepy people may look like ADD so always assess level of sleepiness e.g. Epworth and consider other diagnoses
- Many people treated with alerting agents when primary problem is sleep disorder – (amphetamines and Provigil don’t treat sleep apnea, insomnia or restless legs)
- Sleep studies may be indicated if patient is sleepy instead of tired.

Common Sleep Disorders

• Inadequate Sleep	Most of Us
• “Phase” Disorder	
• Delayed – Teenager	25%
• Advanced – Elderly	25%
• Sleep Walking/Talking	50% of Kids, 5% of adults
• Insomnia	10-15%
• Sleep Apnea and Snoring	5-10%
• Nocturnal Movement Disorder	
•(Restless Legs)	5-10%
• Narcolepsy	1 in 2000

Restless Legs Syndrome (RLS) Defined

A neurological movement disorder

characterized by

1. an irresistible urge to move the legs usually accompanied by uncomfortable sensations
2. that occur most prominently in the evening
3. or when at rest
4. Relieved transiently with movement

What it is not: muscle cramps, referred back pain, other neuropathy pain, other movement disorders and akathesias

Allen et al. *Sleep Med*. 2003;4:101-119.

Epidemiology of Restless Legs Syndrome

- Prevalence[1,2,5]
  - 5% of all school age children
    - 10% of US adults
    - Increases with age
    - Peaks above age 50
- Age of onset varies widely[2,3]
  - Common onset ≥40 years of age
- Present in both men and women, with greater prevalence in women[2,4]

1. Phillips et al. *Arch Intern Med*. 2000;160:2137-2141.
2. Hening et al. *Sleep Med*. 2004;5:237-246.
3. Walters et al. *Neurology*. 1996;46:92-95.
4. Nichols et al. *Arch Intern Med*. 2003;163:2323-2329.
5. JCSM 2012

Overview of Restless Legs Syndrome (RLS)

- Sleep disturbance is often the primary reason patients seek medical attention[3]
- Most common sleep presentations:
  - Sleep Onset Insomnia
  - Phase Delay sleep Pattern
  - Sometimes, multiple arousals
- Believed to be associated with dopaminergic dysfunction[4,5]
- May limit the ability to sit for extended periods
  - Of time[4,6]

1. Phillips et al. *Arch Intern Med*. 2000;160:2137-2141.
2. Hening et al. *Sleep Med.* 2004;5:237-246.
3. Allen et al. *Sleep Med.* 2003;4:101-119.
4. Allen & Earley. *J Clin Neurophysiol*. 2001;18:128-147.
5. Turjanski et al. *Neurology.* 1999;52:932-937.
6. Earley. *N Engl J Med.* 2003;348:2103-2109.

RLS and Depression
Big Overlap – Complicated Relationship

RLS patients

- Harvard Study – 18% had a 12 month rate of onset of major depression
- 37% had lifetime onset of major depression
- Other studies – 33 to 71% of patients with RLS have mood disorders

Depressed patients (psych clinic)

- 26% had met RLS criteria
- Population Studies –
  - OR 1.64 for RLS in depressed patients
    - (Picchetti, D., Sleep, 2005)

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•(Restless Legs)	5-10%
• Narcolepsy	1 in 2000

Sleepiness doesn't kill but

Sleep Apnea

does

Sleep Apnea

- Very high mortality, about same risk as smoking
- Most conservative estimate = 50% increase in cardiovascular events
- Up to 23 times more likely to have a heart attack

Who Gets Apnea?

- Large neck (>17”men, >16” women)
- Small chin
- Family History
- Men more than women before menopause
- Women after menopause
- Stuffy and narrow nose
- Alcohol/sedation

Common Sleep Disorders

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INSOMNIA

Falling Asleep Troubles:

Insomnia

True for both:

- sleep onset insomnia
- sleep maintenance insomnia

1. Initiating event
2. Performance anxiety perpetuating insomnia

Sleepiness and insomnia

- Usually insomnia patients are not sleepy but they may say that they are tired or non refreshed.. Therefore there is not an association with ADD necessarily unless sleepiness results from long hours awake at night..
- Insomnia brains are metabolically active and therefore hyper alert rather than sleepy.
- If someone has insomnia and is sleepy, think they may have another disorder e.g. RLS or apnea

Trouble Falling Asleep
vs
Trouble with Multiple Awakenings

- Falling asleep usually needs behavioral evaluation and treatment

- Multiple awakenings often need medical evaluations

Common Causes of Awakening

- Sleep apnea/Snoring
- Depression/Anxiety
- Drug/Alcohol/Caffeine effects
- Physical Discomfort
- Menopause
- Twitching (periodic movements/ RLS)
- Tooth Grinding
- Room Environment issues (light, noise, etc.)
- Bladder problems (often this is perceived as reason, but isn't)

Recommendations

- No caffeine after 3:00 PM
- Only sleep in bed
- Go to be same time every night
- Get out of bed same time every day
- Can't get to sleep in 20 minutes get up and do something simple until tired
- No glowing screens 1 hour prior to bed
- Make room cold when go to bed & warm to wake up
- Use "blue light" https://www.fullspectrumsolutions.com
- Dawn simulator
- https://www.fullspectrumsolutions.com
- Take meds before get out of bed
- No eating 2 hours prior to bed
- Exercise
- Check out with physician
- Sleep study?