

Handout

Sleep Matters: Sleep and Sleep Disorders During Childhood and Adolescence

March 30, 2011

Presented By:
Daniel Lewin, Ph.D., D.ABSM
National Heart Lung and Blood Institute



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Daniel S. Lewin, Ph.D., D.ABSM

Director, Sleep Disorders Medicine
National Center on Sleep Disorders Research
Division of Lung Diseases
National Heart Lung and Blood Institute
National Institutes of Health

Adjunct Associate Professor of Psychiatry and Pediatrics
George Washington University School of Medicine

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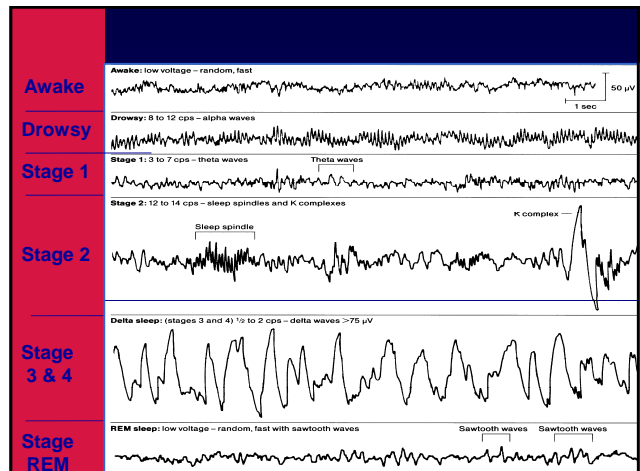
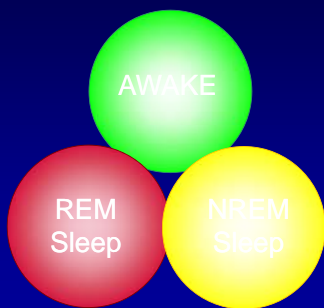
What is sleep?

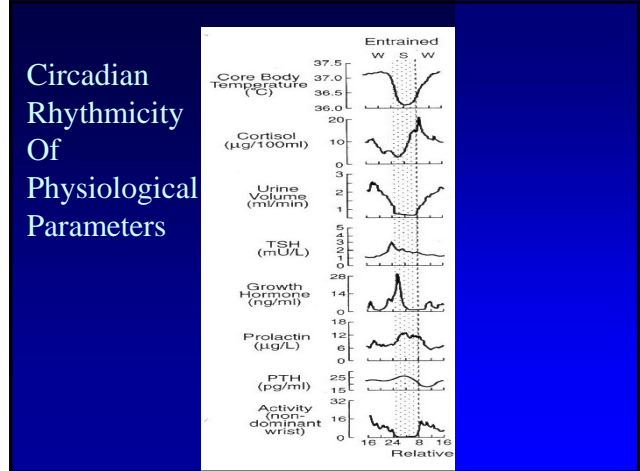
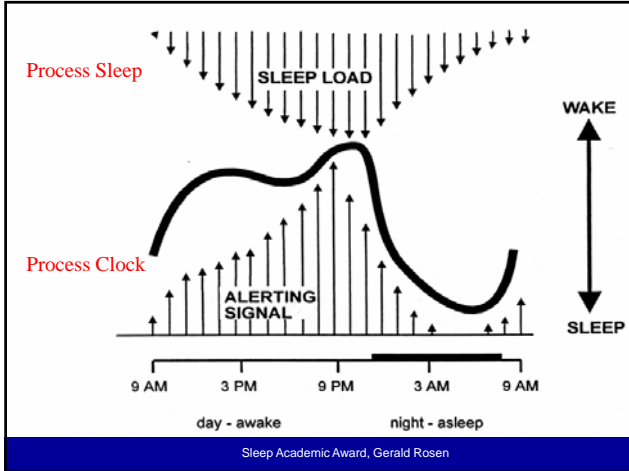


“Sleep is a reversible behavioral state of perceptual disengagement from and unresponsiveness to the environment. It is also true that sleep is a complex amalgam of physiological and behavioral processes”.

(Carskadon & Dement)

States of Being

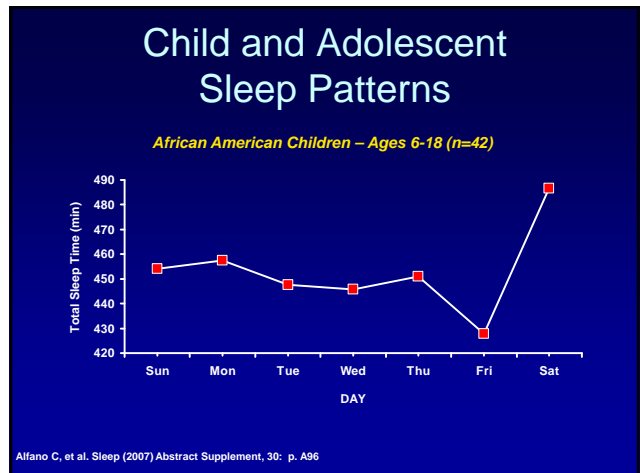




Estimated Norms for 24-Hour Sleep Duration

| AGE GROUP | POLL DATA (NSF '05 & '06) | POPULATION DATA Iglowstein '03 (Switzerland) |
|-------------------------|---------------------------|--|
| Infants (3-11 mo.) | 12.7 | 14.2-13.9 (1.7) |
| Toddlers (12-35 mo.) | 11.7 | 13.5-12.5 (1.2) |
| Pre-K and K (3-5 yrs.) | 10.4 | 12.5-11.4 (0.9) |
| School-aged (6-10 yrs.) | 9.5 | 11-9.9 (0.6) |
| 11-15 yrs. | 8.4-7.2 | 9.6-8.1 (0.7) |
| 16-18 yrs. | 7.2-6.9 | |

National Sleep Foundation. *Sleep in America* polls, 2005 & 2006. Available at: <http://www.sleepfoundation.org/site/c.hulXKJMOIXFb.2417353>.
Iglowstein I, et al. *Pediatrics*. 2003;111:302-307.



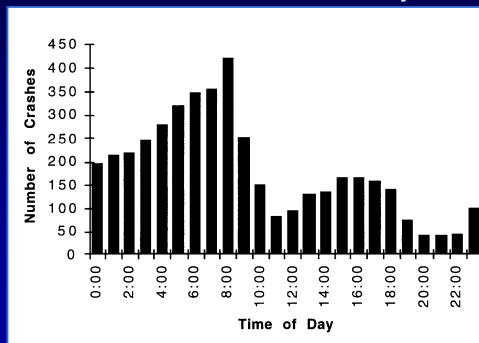
Hypotheses Regarding Functions of Sleep

- Physical and mental restoration
- Replenishment/break down of brain chemicals (hormones, neurotransmitters, peptides)
- Communication between brain regions
- Memory consolidation
- Conservation of resources
- Miscellaneous biological processes (digestion & immune function)
- Safe during times of perceptual weakness & vulnerability

Functions of Sleep: Experimental Evidence

- Effects of Sleep Deprivation
 - Experimental Animal studies
 - Complete sleep deprivation results in death
 - Experimental human adult studies
 - decrements in cognitive, perceptual, and motor abilities
 - Naturalistic human adult studies
 - Increased risk of mortality
 - Increased risk of mental health disorders

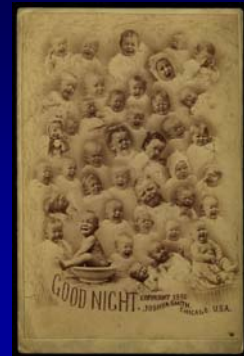
Effects of Tiredness Accidents vs. Time of Day



Sleep Academic Award, Mark Muhowald

A Few Key Principles

- A tired child does not look like a tired adult.
- There is high co-morbidity of sleep and psychiatric disorders in children



Behavioral Insomnias of Childhood (BIC)

➤ Sleep Onset Association Disorder

- Prevalence: 25-30%
- Age group: 6-36 months
- Clinical Features
 - Delayed time to fall asleep & nighttime awakenings
 - Falling asleep becomes associated with cues
 - Cue must be present

➤ Limit Setting Sleep Disorder

- Prevalence: 25-30%
- Age group: 18-60 months
- Clinical Features
 - Delayed bedtime
 - Parents reinforce undesirable behavior at bedtime

American, S. D. A. (1997). *The International Classification of Sleep Disorders Diagnostic and Coding Manual, Revised*. Rochester, MN: American Sleep Disorders Association.
Mendel, J. A. (1999). "Empirically supported treatments in pediatric psychology: bedtime refusal and night wakings in young children." *J. Pediatric Psychology*, 24(6): 495-81.

Other Causes of BIC

- Nighttime feeding after 6 months of age
- Medical causes
 - Gastroesophageal Reflux Disease
 - Pain
 - History of colic
- Family Preference

Case Study - Carl

- 24 month old boy
- Presenting Complaint:
 - irregular sleep - wake schedule
 - Sleeps w/ mother in her bed every night
 - Difficulty weaning
- History
 - 38-year- old mom
 - History of colic and G.I. Reflux
 - Normal development

TWO-WEEK SLEEP RECORD **2.5 years**

PATIENT'S NAME Carl PARENT'S NAME _____
 PATIENT'S DATE OF BIRTH 8/03 ADDRESS _____
 DATE OF SLEEP RECORD FROM _____ TO _____ TELEPHONE NUMBER _____

INSTRUCTIONS:
 Leave blank the periods your child is awake. Mark your child's bedtimes with downward-pointing arrows. ↓
 Fill in the times your child is asleep with shaded boxes. Mark the times your child gets up in the morning and after naps with arrows pointing upwards. ↑

| Day | AM | | | | | PM | | | | | |
|------|------|------|------|------|-------|------|------|------|------|------|-------|
| | 2:00 | 4:00 | 6:00 | 8:00 | 10:00 | Noon | 2:00 | 4:00 | 6:00 | 8:00 | 10:00 |
| 8/15 | | | | | | | | | | | |
| 8/16 | | | | | | | | | | | |
| 8/17 | | | | | | | | | | | |
| 8/18 | | | | | | | | | | | |
| 8/19 | | | | | | | | | | | |
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| 8/22 | | | | | | | | | | | |
| 8/23 | | | | | | | | | | | |
| 8/24 | | | | | | | | | | | |
| 8/25 | | | | | | | | | | | |
| 8/26 | | | | | | | | | | | |

SPECIAL OBSERVATIONS AND NOTES:
 N=Nursing
 ☹=Irritable

Carl's Treatment

- Decrease frequency and duration of nursing
- Limit sleep to own bedroom
- Fade parents involvement at bedtime
- Involve father in bedtime ritual
- Introduce transitional object
- Limit setting during day

Targets of Treatment

- **Bedtime Resistance**
 - Curtain Calls
 - Nighttime fears
 - Bed/crib aversion
 - Crying/tantrums
- **Nocturnal Awakenings**
 - Nighttime Call-outs
- **Early Morning Awakenings**
 - (i.e., schedule conflicts)

BIC Treatment

- Establish appropriate bed times
- Establish appropriate bedtime routines

BIC Treatment

- Extinction and its variations
 - Cry It Out" – Cold Turkey
 - ignore child's attention seeking/inappropriate behavior
 - immediate withdrawal of parent, bottle, holding, breast feeding
 - **Gradual withdrawal of parent involvement**
 - Increase visit intervals
 - Decrease duration of visits
 - Quick Check
 - Equal interval visits
- Bed time pass

Sleep Hygiene

- Regular bed and wake times
- Eliminate caffeine
- Eliminate stimulating behavior before bedtime
- No electronic media within an hour of bedtime.
- Quiet reading/snuggling
- Establish and early evening worry time

Psychophysiological Insomnia

- Difficulty falling asleep
- Difficulty staying asleep
- Poor sleep quality

Psychophysiological Insomnia in Children – Treatment

- Remove the clock
- Bed is for sleep
- Sleep hygiene
- Relaxation therapies

Case Study: Sandra

- 7-year-old girl
- Presenting Complaint:
 - History of waking in an extremely agitated state
 - Has left house on 1 occasion
 - Mild snoring
- Medical and Psychiatric History
 - Allergies
 - Anxious, but no psychiatric diagnosis

Non-REM Parasomnias

- Confusional arousals, night terrors, sleep walking
- Treatment – **Safety-Safety-Safety-Safety**
 - Parent Education
 - Increase total sleep time
 - Afternoon naps
 - Scheduled awakenings

Case Study: Brandon

- 16-year-old boy
- Presenting complaint
 - Missed 30+ days of school, scheduled truancy hearing
 - Does not get up for school
 - Cannot fall asleep at night
- Medical History
 - Unremarkable
- Psychiatric History
 - Long history of academic problems
 - Possible history of depression

Circadian Rhythm Disorder Delayed Sleep Phase Syndrome

- Definition:
A shift of the sleep period to a later time that conflicts with academic and work schedules & social norms
- Prevalence:
affects 7% of adolescents

Delayed Sleep Phase Treatment

- Motivation???
- Gradual advance
- Melatonin???
- Light

Case Insufficient Sleep Syndrome

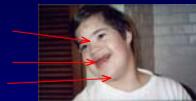
- 17 year old adolescent male
- History of decreased sleep
- Inconsistent grades
- High pressure home and school
- Mild anxiety
- Treatment resistant

Sleep Disordered Breathing Sleep Apnea

- Definition: Partial and complete obstruction of airway and decreased airflow
- Prevalence of Obstructive Sleep Apnea (OSA)
 - 1.1-2.9% of 4-5 year-olds (Ali, 1993)
 - 4.7% of 8-11 year olds (Spillsbury, 2003)
 - 13-33% of overweight children (Beebe, 2006)
 - 18% of children w/ behavior & academic problems (Gozal 2001)
- Prevalence of Primary Snoring
 - up to 12% children

Pediatric OSAS: Signs and Causes

- **Signs:**
snoring, snorting,
gaspings, airflow
cessation



- **Causes:**
obstructed or
narrow upper
airway



Pediatric OSA: Effects

- **Primary Effects:**
 - Decreased oxygen to brain and body
 - Sleep disruption

Top Sleep Tips

- No electronic media in the bedroom and within an hour of bedtime
- Regular bedtime routines
- Quiet and together time before bedtime
- Regular bedtime routine
- Comfortable sleep environment
- Cut out Caffeine
- NEVER DRIVE SLEEP DEPRIVED!

Pediatric Sleep Resources & Suggested Bibliography

- American Academy of Sleep Medicine - AASM.org
- National Institutes of Health – National Center on Sleep Disorders Research
- National Sleep Foundation - Sleepfoundation.org
- Sleeping Through the Night – Jodi Mindell
- Solve Your Child's Sleep Problems - Richard Ferber
- Guide to Your Child's Sleep – American Academy of Pediatrics

Daniel S. Lewin, Ph.D., D.ABSM
Program Director, Sleep Disorders Medicine
National Center on Sleep Disorders Research
Division of Lung Diseases
National Heart Lung and Blood Institute
National Institutes of Health
Email: LewinDS@nhlbi.nih.gov
Phone: 301-443-4027



THANK YOU

Two-Week Sleep Record

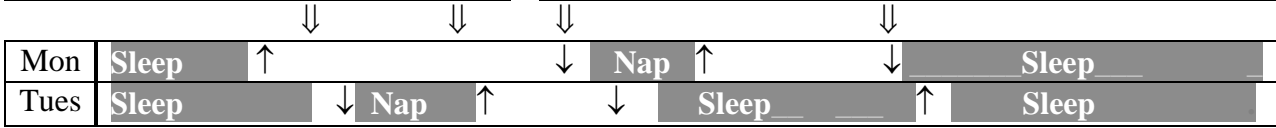
Patient's Name _____ Parent's Name _____

Date of Sleep Record: From _____ To _____ Study Number _____

Instructions:

1. Leave wake periods blank

2. Mark bedtimes with down arrows



3. Fill in Sleep Periods

4. Mark wake-up times with up arrows

| Day | ↓ Midnight | | | | | | | | | | | ↓ Noon | | | | | | | | | | | | | | |
|-----|------------|-----|----|----|----|----|----|----|----|----|----|--------|-----|-----|----|----|----|----|----|----|----|----|----|-----|-----|--|
| | Mon-Fri | 12a | 1a | 2a | 3a | 4a | 5a | 6a | 7a | 8a | 9a | 10a | 11a | 12p | 1p | 2p | 3p | 4p | 5p | 6p | 7p | 8p | 9p | 10p | 11p | |
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