Evaluation of the Sleepy Child: What to Do When the Sleep Study is Normal

Stacey L. Ishman, MD
Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Thanks to: Scott Brietzke
Susan Garetz
Pell Wardrop

Objectives

1. Describe the appropriate clinical assessment of the sleepy child
   - screening questions/ questionnaires
   - exam findings
   - testing to screen for non-SDB causes of daytime sleepiness in children

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Objectives

2. Be familiar with the incidence, identification and impact of medical conditions that contribute to daytime tiredness including:
   - narcolepsy
   - nocturnal seizures
   - restless leg syndrome
   - circadian rhythm disorders
3. Recognize the importance of adequate sleep hygiene and review the components of good sleep habits

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What We'll Cover

1) Evaluation of the sleepy child
2) Narcolepsy, RLS
3) Circadian rhythm disorders
4) Sleep hygiene

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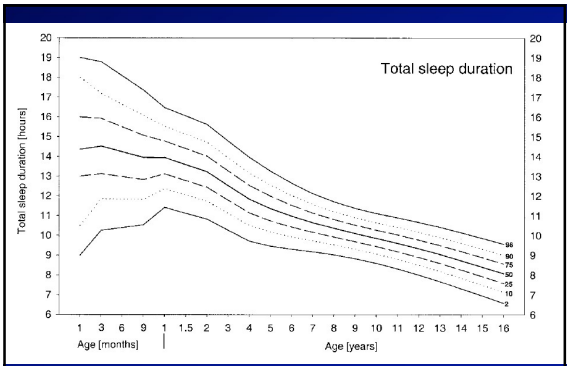

Iglowstein I, et al. Pediatrics 2003;111:302–307

Pediatric Sleep Disorders

- Insomnia
- Sleep-related Breathing Disorders
- Hypersomnia (not related to breathing)
- Circadian Rhythm Disorder
- Parasomnia
- Sleep-Related Movement Disorders

Sleep Disorders

- Insomnia:
  - Chronic insomnia (3 months)
    - Psychophysiological (Conditioned) Insomnia
      - Learned sleep preventing associations
    - Paradoxical insomnia
      - Perception of severe sleep disturbance without evidence
    - Idiopathic insomnia
      - Longstanding since childhood
    - **Inadequate Sleep Hygiene**
      - ADLs inconsistent with good sleep
    - Behavioral Insomnia of childhood
      - Limit-setting & Sleep-onset association

www.i.ehow.com

Sleep Disorders

- Insomnia:
  - Short-term insomnia (<3 months)
  - Normal
    - Short sleeper (<6 hours)
    - Excessive time in bed

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Pediatric Sleep Disorders

- Sleep-related Breathing Disorders
  - Obstructive Sleep Apnea
    - Adult - Pediatric
  - Central Sleep apnea
    - Cheyne stokes – altitude – medical disorder
    - Infancy – prematurity
    - Treatment-emergement
  - Sleep related hypoventilation
    - Obesity hypoventilation – congenital central alveolar hypoventilation syndrome – due med/dz
  - Sleep related hypoxemia

Not covered in detail in this talk

Pediatric Sleep Disorders

- Sleep-related Breathing Disorders
  - Normal Variants
    - Snoring
    - Catathrenia – sleep groaning

Not covered in detail in this talk

Pediatric Sleep Disorders

- Central disorders Hypersomnolence
  - Narcolepsy Type 1 - with cataplexy
  - Narcolepsy Type 2 - without cataplexy
  - Idiopathic Hypersomnia
  - Kleine-Levin Syndrome
  - Hypersomnia due to medical disorder – meds - psych
  - Insufficient sleep syndrome
  - Normal Variant
    - Long sleeper

Pediatric Sleep Disorders

- Circadian Rhythm Sleep-Wake Disorder:
  - Delayed Sleep-Wake Phase Syndrome
  - Advanced Sleep-Wake Phase Syndrome
  - Irregular sleep-wake rhythm disorder
  - Non-24 hour sleep-wake Rhythm disorder
    - Free-running
  - Shift work disorder
  - Jet lag disorder
  - Circadian sleep-wake disorder NOS

Pediatric Sleep Disorders

- Parasomnia:
  - NREM-Related Parasomnias
    - Disorders of Arousal
    - Confusional Arousals
    - Sleepwalking
    - Sleep terrors
    - Sleep related eating disorder

Pediatric Sleep Disorders

- Parasomnia:
  - REM-Related Parasomnias
    - Nightmare Disorder
    - REM behavioral disorders
    - Recurrent isolated sleep paralysis
  - Other Parasomnias
    - Exploding head syndrome
    - Sleep related hallucinations
    - Sleep Enuresis
    - Due to med disorder, medications, unspecified

Pediatric Sleep Disorders

- Sleep-Related Movement Disorders:
  - Restless Leg Syndrome
  - Periodic Limb Movement Disorder
  - Sleep-Related Leg Cramps
  - Sleep-Related Bruxism
  - Sleep-Related Rhythmic Movement Disorder

Pediatric Sleep Disorders

- Sleep-Related Movement Disorders:
  - Benign sleep myoclonus of infancy
  - Propriospinal myoclonus of sleep onset
  - Periodic Limb Movement Disorder
  - Sleep-Related Movement Disorder due to
    - Med condition – medication/substance - unspecified
- Normal variants
  - Excessive fragmentary myoclonus
  - Hypnagogic foot tremor/alternating leg muscle activation
  - Sleep starts (hypnic jerks)

Pediatric Sleep Disorders: Infants

- Colic (1-4 months)
  - Melatonin metabolism?
- Conditioned Insomnia
- Adjustment Insomnia

www.futureforchildren.princeton.edu

Pediatric Sleep Disorders: School-Age

- Sleep Hygiene
- Adjustment issues
- Anxiety related sleep issues
- Obstructive Sleep Apnea
- Parasomnia

www.understanding-sleep-disorders.com

Pediatric Sleep Disorders: Adolescents

- Sleep Hygiene!!!
  - Diet
    - Caffeine
    - Chocolate
- Anxiety
- Obstructive Sleep apnea
- Narcolepsy
- Klein-Levin Syndrome

www.azteenmagazine.com

Sleep Diary: For _____

Please bring to clinic or fax to 410-955-0035, Attn: Dr. Stacey Ishman

Remember to put your name/child's name on this form. Please make copies of this blank form.

Instructions:

Mark the time you/your child get **in** bed and are awake but trying to sleep, mark it with a down-arrow during that hour. **l**

Mark the time you/your child is asleep by filling in the boxes during those hours. (see below)

Mark the time you/your child gets up (even if during the night). Use a(*) if woken up and an up arrow if waking up on your/their own (no alarm or being woken up by another). **t**

Let me know if you/your child was sick or if there were unusual circumstances (a party, travel).

Remember to log naps.

	Evening/Night						Morning											Afternoon					
Date	Day	PM	PM	PM	PM	PM	PM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	PM	PM	PM	PM	PM
		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12 noon	1	2	3	4	5
	Mon																								
	Tues																								
	Wed																								
	Thur																								
	Fri																								
	Sat																								
	Sun																								

Example below:

Date	Its.	PM	PM	PM	PM	PM	PM	PM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	PM	PM	PM	PM	PM
	Mon	6	7	8	9	10								6	7	8			10	11	12noon			5

Comment: Could not fall asleep. I woke him at 5am to go to doctor, he napped in the car later.

Key: Asleep **l** In bed, awake **t** Out of bed, woke on their own * Out of bed, woken up by alarm etc.

Evaluation of the Sleepy Child: History

- Medications
  - Allergy meds (Diphenhydramine)
  - Antidepressants
  - ADHD medication timing
- Diet
  - Caffeine
  - Chocolate / sugar
- Family History
  - Parasomnia
  - Insomnia/RLS

Evaluation of the Sleepy Child: Physical Exam

- Height / Weight
- BMI
- Observation of interaction with parent(s)
- Sleep Apnea / Obstruction risk
  - Craniofacial structure
  - Occlusion
  - Neck Size
  - Tonsil size / Mallampati Score

Role of Sleep Study

- Usually not required for majority of sleep disorders
  - Insomnia
  - Straight-forward Parasomnia
  - Circadian Rhythm Disorders
- Can be helpful in certain situations
  - Concerned about seizure
  - Movement disorders
    - May consider empiric treatment
  - Narcolepsy / Severe Hypersomnia
    - Multiple Sleep Latency Test (MSLT)
  - Still concerned about OSA

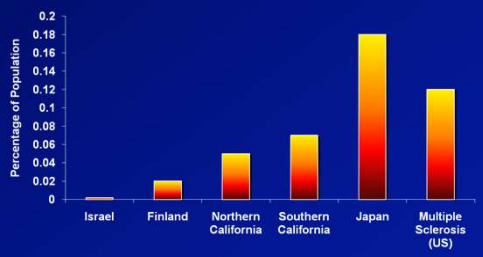
Narcolepsy and Restless Leg Syndrome

ICSD-2 Criteria for Narcolepsy

- Characterized by excessive sleepiness
- Two variants :
  - Narcolepsy 1 (With Cataplexy)
  - Narcolepsy 2 (Without Cataplexy)

Adapted from AASM 2005 Slide Set: Narcolepsy

Narcolepsy with Cataplexy (type 1) Prevalence



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Adapted from AASM 2005 Slide Set: Narcolepsy – Data from Mignot 1998

Symptoms of Narcolepsy

- Excessive daytime sleepiness (EDS)
- Cataplexy
- Hypnagogic hallucinations
- Sleep paralysis

Tetrad

- Fragmented nocturnal sleep

Pentad

- Other associated features

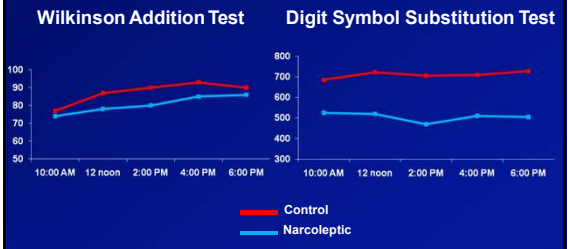
Adapted from AASM 2005 Slide Set: Narcolepsy

Excessive Daytime Sleepiness

- Sleep attacks on a background of chronic sleepiness or fatigue
- Frequent napping, usually refreshing
- Memory lapses and automatic behaviors
- Impaired attention / concentration
  - Decreased work performance
  - Increased drowsy driving crashes
- Visual disturbances

Adapted from AASM 2005 Slide Set: Narcolepsy

Excessive Daytime Sleepiness



Adapted from Mitler et al 1982

Adapted from AASM 2005 Slide Set: Narcolepsy

Cataplexy

- Muscle weakness triggered by emotions
  - Joking, laughter, excitement, anger
  - Brief duration, mostly bilateral
  - Sudden onset
- May affect any voluntary muscle
  - Knee / leg buckling, jaw sagging, head drooping, postural collapse
- Consciousness maintained at the start

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Adapted from AASM 2005 Slide Set: Narcolepsy

Cataplexy

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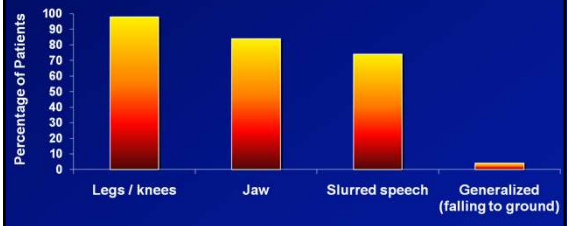
Adapted from AASM 2005 Slide Set: Narcolepsy

Cataplexy



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Adapted from AASM 2005 Slide Set: Narcolepsy

Hallucinations

- Vivid hallucinations at sleep onset (hypnagogic) or awakening (hypnopompic)
- Auditory: sounds, music, someone talking to them
- Visual: colored circles, parts of objects
- Can be vividly realistic and anxiety provoking

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Adapted from AASM 2005 Slide Set: Narcolepsy

Sleep Paralysis

- Sudden inability to move on falling asleep or on awakening
- Episodes are generally brief and benign, end spontaneously
- Can cause significant anxiety
- Associated with
  - Sleep deprivation
  - Narcolepsy
  - Obstructive sleep apnea

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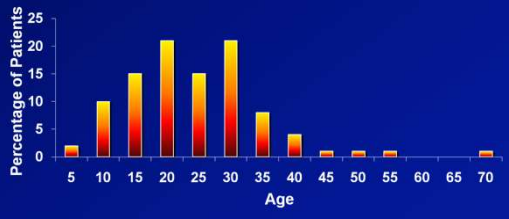
Adapted from AASM 2005 Slide Set: Narcolepsy

Narcolepsy Age of Onset



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Adapted from AASM 2005 Slide Set: Narcolepsy

Narcolepsy Environmental/ Developmental Factors

- Most cases are sporadic
- 1% to 2% 1st degree relatives have narcolepsy-cataplexy
  - (RR= 20 - 40 times)
- Familial clustering in about 10%
- Most monozygotic twins are discordant
- Environmental & developmental factors are implicated

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Adapted from AASM 2005 Slide Set: Narcolepsy

Narcolepsy Evaluation

- History
  - Sleepiness, cataplexy, other disassociated REM sleep features
- Polysomnography (PSG)
  - Exclude other causes for EDS (insufficient sleep, apnea)
  - Identify and treat associated conditions
- Multiple Sleep Latency Test (MSLT)
  - Objective sleepiness
  - Sleep onset REM periods (SOREMPs)
- CSF Hypocretin levels

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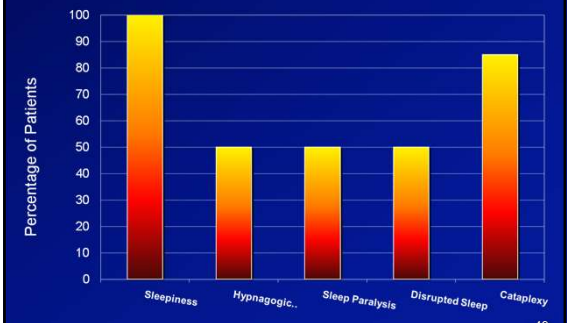
Adapted from AASM 2005 Slide Set: Narcolepsy

Narcolepsy Symptom Prevalence



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Adapted from AASM 2005 Slide Set: Narcolepsy

Narcolepsy Sleep Study Findings

- Short sleep latency
- Sleep onset REM period in 50% of narcoleptics
- Sleep fragmentation (REM and NREM)
  - Increased number of arousals
  - Increased stage 1 sleep
  - Low sleep efficiency
- Frequently associated with periodic limb movements

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Adapted from AASM 2005 Slide Set: Narcolepsy

Narcolepsy Sleep Study Findings

- The MSLT is:
  - A validated objective measure of the tendency to fall asleep
  - Indicated as part of the evaluation of patients with suspected narcolepsy to confirm the diagnosis
- For 2 or more SOREMPs during MSLT:
  - Sensitivity was 0.79
  - Specificity was 0.98

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From Arand et al 2005

Adapted from AASM 2005 Slide Set: Narcolepsy

Narcolepsy Treatment

- Excessive sleepiness
  - Scheduled naps
  - Modafinil & armodafinil
  - Sodium oxybate
  - Amphetamine (meth- and dextro-)
  - Methylphenidate
  - Selegiline

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From Arand et al 2005

Adapted from AASM 2005 Slide Set: Narcolepsy

Narcolepsy Treatment

- Cataplexy, sleep paralysis, hallucinations
  - Sodium oxybate
  - Less evidence – cataplexy only
    - TCAs
      - Amitriptyline, clomipramine
    - Fluoxetine

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From Arand et al 2005

Adapted from AASM 2005 Slide Set: Narcolepsy

Seizure Differential

Table 1 Characteristics of Specific Sleep Disorders and Seizures

	Seizure	Sleep Walk/Talk Sleep Terrors	RLS	Narcolepsy
Incontinence	+	-	-	-
Tongue biting	+	-	-	-
Confusion	+	+	-	-
Tonic-clonic movmnts	+	-	-	-
Drooling	+	-	-	-
Amnesia	+	+	-	-
Occur while awake	+	-	+	+

PLMS, periodic limb movements of sleep; RLS, restless legs syndrome

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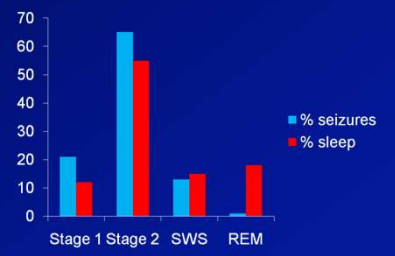
Adapted from Basil. Nocturnal Seizure. Seminar Neurology 2004;24(3):293.

Seizure Onset by Sleep Stage

- Seizure onset primarily in 1/2
- Rare during ???



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Basil. Nocturnal Seizure. Seminar Neurology 2004;24(3):293.

Seizures - History

- Important to differentiate from parasomnias
- Speech often stereotypical in seizures
  - Vs. sleep talking=speech is random
- Occur predominantly in Stages 1/2
  - Vs. sleep walking=usually in SWS
- Atypical characteristics suggestive of seizure warrant full EEG evaluation
  - Nocturnal injury
  - Tongue or lip biting
  - Morning muscle soreness

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Basil. Nocturnal Seizure. Seminar Neurology 2004;24(3):293.

RLS Diagnosis in Children

- What are the 4 Essential criteria

  - Four essential adult criteria plus description in child's own words consistent with leg discomfort **OR**
  - Four essential adult criteria plus two supportive criteria

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RLS Diagnosis

- A compelling urge to move the limbs
- Symptoms worse/only at rest
- Variable/temporary relief by activity
- Symptoms worse in the evening /night

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RLS Diagnosis in Children

- Supportive criteria
  - Sleep disturbance for age
  - Biological parent or sibling with RLS
  - Sleep study documenting periodic limb movement index ≥5/h

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RLS Diagnosis

- History
  - Primarily a clinical diagnosis
  - 7 to 10% of population in US/ N Europe
  - Increases with age
  - Strong FH correlates with earlier age of onset (<45yo)
- Incidence
  - 2x more common in women
  - More common in whites than blacks
  - More common in iron deficient, pregnant and end-stage renal disease

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RLS Aggravators

- Nicotine
- Caffeine
- SSRIs
- Metoclopramide
- Prochlorperazine maleate
- Dopamine antagonists
- Diphenhydramine
- Alcohol

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RLS Diagnosis

- Supportive clinical features
  - In Children
    - Behavioral and mood difficulties
      - Including ADHD
    - Cognitive issues
    - Sleep difficulties
  - Adults and children
    - Sleep disturbance
    - Periodic leg movements
    - Response to dopaminergic therapy
    - Family history
    - Normal medical/physical evaluation

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RLS Diagnosis

- Supplemental workup
  - Polysomnography
  - Iron profile
  - And/or neuropathy screen

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RLS – Sleep Study

- Rhythmic or semi-rhythmic movements of the legs
- Found in 90% of RLS patients during sleep
- > 5 periodic limb movements/hour in kids
- > 15/hour in adults

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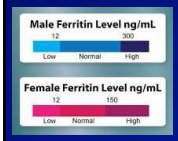
RLS – Iron Studies

- Iron deficiency defined as:
  - Ferritin level ≤ 40 ng/ml
    - acute-phase reactant
    - may misrepresent the true iron stores, so the transferrin saturation determined along with it
  - Transferrin saturation percentage ≤ 16%



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RLS Treatment

- Behavioral techniques - *1st line in peds
- Sleep Hygiene - * 1st line in peds
- Iron – very low or iron deficient
  - Ferritin below 40
- Dopaminergic agents
  - Pramipexole - Rotigotine
  - Ropinirole
  - Levodopa - augmentation
- Opiates – oxycodone, tramadol
- Antiepileptics – gabapentin, pregabalin69, carbemazepine

Circadian Rhythm Disorders

Incidence of Circadian Rhythm Disorders

- NSF- 1/15 children in age range of 5-13 years have CRD
- 200,000 children in US
- Adolescents reported prevalence up to 16% with Delayed Sleep Phase Syndrome

Circadian Rhythm

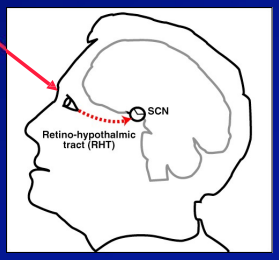
- Natural internal clock is slightly longer than 24 hours
- Cues in our environment keep us on a 24 hour clock –light, meals, social activity

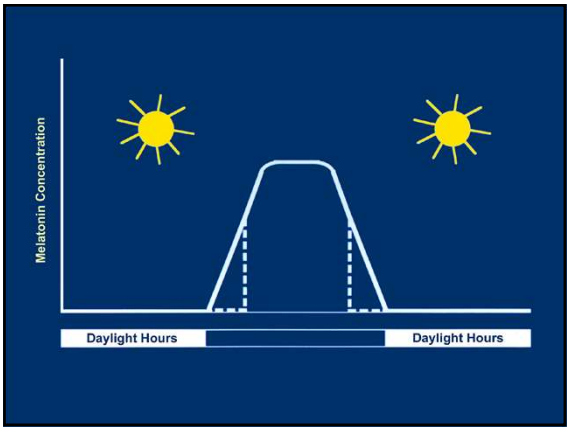
Physiology of Circadian Rhythm

- The suprachiasmatic nucleus (SCN)= pacemaker
- Light is the strongest influence on the sleep/wake cycle
- Melatonin secretion signals sleep period

Retino-hypothalamic Tract

Light information transmitted to the brain by non-visual neurons (ganglion cells) originating in the back of the eye





Types of Pediatric Circadian Rhythm Disorders

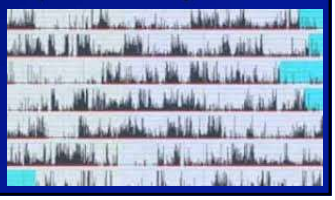
- Delayed Sleep Phase Syndrome
- Advanced Sleep Phase Syndrome
- Irregular Sleep Wake Pattern
- Non-24 hours (Free-running)

Advanced Sleep Phase Syndrome

- Sleep and wake very early 6pm- 3am
- May be genetic
- 1% Elderly
- Children- the early awakening is a problem for parents

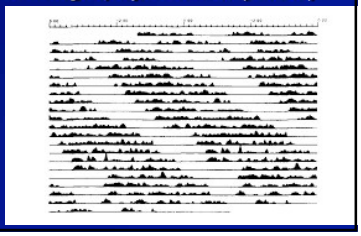
Irregular Sleep Wake pattern

- Random sleep wake pattern
- Lack of environmental cues- parental schedule
- Profound developmental delays
- Dementia



Non-24 Sleep Wake pattern

- History of insomnia or EDS or both
- > 3 months
- Sleep logs or actigraphy confirm (>14D)
- Blind 50%



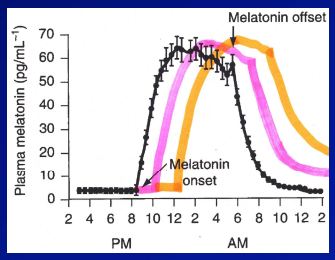
General Treatment of CRDs

- Firm sleep/wake schedule- fixed AM arising time most important
- Avoid weekend variation
- Sleep Hygiene- caffeine, computer, cell phones, lights, TV

Delayed Sleep Phase- Night Owls

- Delay in sleep time by 2 or more hours
- Difficulty arising in the morning
- Sleeping in very late on weekends
- Results in sleep deprivation during the week
- Occurs in 7-16% of Teens

Melatonin Secretion Delay



Factors contributing to DSPS

- Evening BLUE light exposure - suppresses melatonin secretion
  - Computer screens
  - Video Games
  - Bright overhead lighting

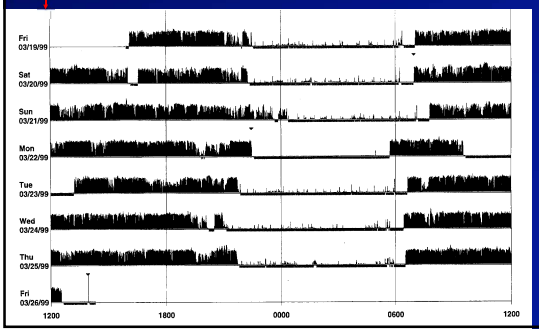
History

- Parents may not be aware of their teen's sleep pattern
- Teens may be reluctant to reveal their sleep pattern

Treatment of DSPS

- Sleep Hygiene
- Firm Sleep Schedule
- Melatonin
- Chronotherapy

Actigraphy - nl or not



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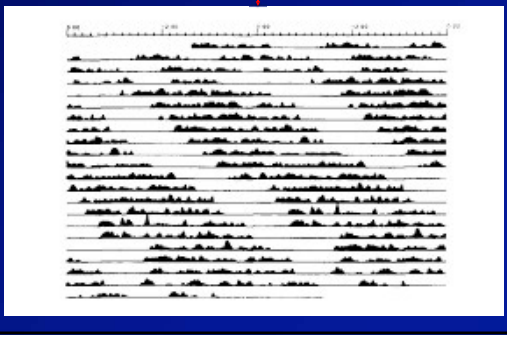

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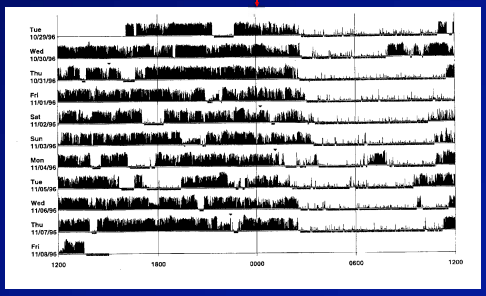

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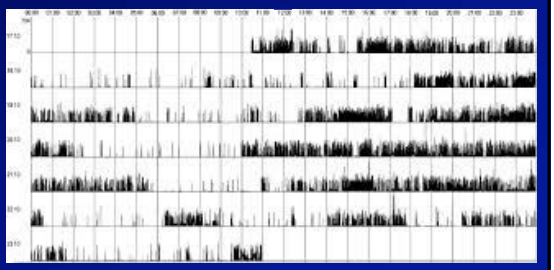


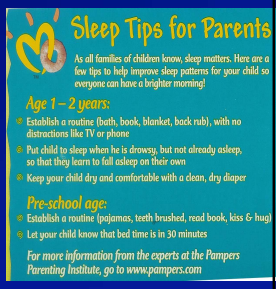
Sleep Hygiene

Sleep Hygiene: General

- Comfortable Sleep environment
  - Correct temperature
  - Quiet
  - Dark

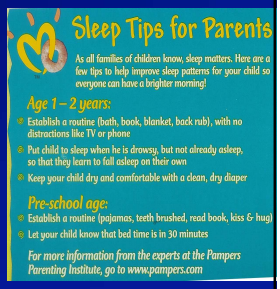
Cheerios & Pampers Advice

- Age 1-2 years
  - –Put child to sleep when drowsy, but not already asleep



Cheerios & Pampers Advice

- Pre-school age
  - –Establish a routine



Sleep in Children

- "Mommy, can I have a glass of water ?"

Need to look at the bigger picture

Limit-Setting Sleep Disorder

- Behavioral insomnia of childhood
  - – Bedtime stalling and repeated demands
- Treatment
  - – Consistency in routine and limit setting
    - Day AND night time
  - – Time warning(s) (bedtime in 30, 10, 5 minutes)
  - – Positive reinforcement
    - Charts
    - Rewards

How many hours of sleep does the average teenager need?

- Older school-aged children and teens need on average about 9.25 hours of sleep a day
  - Carskadon MA et al. Sleep 1980

How many hours of sleep does the average teenager get?

- Sixth-graders sleep an average of 8.4 hrs on school nights
- 12th-graders sleep on average 6.9 hrs/ night
  - 2 hours less sleep than recommended
- Only 20 percent of teens get 9 hours of sleep on school nights

Sleep in America Poll 2006

Caffeine

- 76% of children are getting caffeine from some source on a daily basis
  - Journal of the American Dietetics Association 2004
- 31% of teens consume at least 2 caffeinated beverages/ day
  - Sleep in America Poll 2006
- 31% of US teens drink energy drinks on a regular basis
  - Simmons research poll 2006

Caffeine

Coca-Cola	12 oz	34 mg caffeine
Diet Coke	12 oz	45 mg caffeine
Red Bull	8.5 oz	80 mg caffeine
Monster	19 oz	160 mg caffeine
Cocaine energy drink	8.9 oz	280 mg caffeine
KIT KAT wafer bar	1.5 oz	6 mg caffeine
HERSHEY'S KISSES	9 pieces	9 mg caffeine
Starbucks tall latte	12 oz	75 mg caffeine

Caffeine

- Caffeine takes up to 6 hours to be excreted from the body
- Teens who drink caffeinated beverages get less sleep than those who do not
  - Sleep in America poll 2006

School Performance

- 28 percent of high school students said they fell asleep in class at least once a week
- 22 percent dozed off while doing homework
- 14 percent of teens arrive late or miss school because they oversleep
  - Sleep in America poll 2006

School Performance

- Eighty percent of students who get the recommended amount of sleep are achieving As and Bs in school,
- Student who get less sleep are more likely to get lower grades
  - Sleep In America Poll 2006

Sleep and Mood

- Among teens who report being unhappy or tense
  - 73% feel they don't get enough sleep
  - 59% report being too sleepy during day
- Teens who sleep > 9 hours/night
  - Report more positive moods then peers
    - Sleep in America poll 2006

Automobile Safety

- Drowsy drivers cause about 100,000 accidents a year
- Over half of those crashes involve drivers from 16 to 25 years old
- More than half of adolescent drivers (51 percent) have driven while drowsy in the past year
- 15% of drivers in grades 10-12 drive while drowsy at least once a week
  - Sleep In America poll 2006

School Start Times

- Most middle and high schools start later than elementary schools
- Teenagers often can't fall asleep early, even if they are in bed

School Start Times

- Survey 10,000 6-12 grade students before and after school start time moved from 7:30-8:30 AM in Kentucky
- The number of students who received at least eight hours of sleep per night increased from 35.7 % to 50 %.
- 16.5% drop in auto accident rates for teen drivers
  - Journal of Clinical Sleep Medicine 2008

Recommendations: Teens

- Regular bedtime and sleep schedule
- Relaxing bedtime routine
  - Reading, music
- Remove distractions from bedroom
  - TV, Phone, computer
  - Use parental controls, check phone logs
- Avoid caffeine
  - Especially after lunch

Recommendations Parental Awareness

- Most teens know they're not getting enough sleep
  - Half of teenagers admit they get less sleep than they need to be at their best
  - 51 percent say they feel too tired or sleepy during the day
- 90 percent of parents believe their adolescents are getting enough sleep on school nights
  - Sleep in America Poll 2006

Parental Awareness: Sleep Needs

How Much Sleep Do You Really Need?

Age	Sleep Needs
Newborns (1-2 months)	10.5-18 hours
Infants (3-11 months)	9-12 hours during night and 30-minute to two-hour naps, one to four times a day
Toddlers (1-3 years)	12-14 hours
Preschoolers (3-5 years)	11-13 hours
School-aged Children (5-12 years)	10-11 hours
Teens (11-17)	8.5-9.25 hours
Adults	7-9 hours
Older Adults	7-9 hours

- www.sleepfoundation.org

Summary

- Sleep hygiene issues are by far the most common pediatric sleep problems
- Sleepiness is not the most common way children with sleep disorders present
- The sleep history and sleep diary are the most useful tools to make a diagnosis
- The physical exam is of limited usefulness
- PSG is only used in a minority of cases

Summary

- Narcolepsy can occur in children and is characterized by
  - Excessive daytime sleepiness (EDS)
  - Cataplexy (with = type 1, without = type 2)
  - Hypnagogic hallucinations
  - Sleep paralysis
- PSG with MSLT is the primary tool for diagnosis

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Summary

- Seizures must be differentiated from parasomnias
  - Can be increased with concomitant OSA
  - Extended montage EEG with the PSG may pick up nocturnal seizures
  - Tend to occur in NREM, rare in SWS and REM
  - Full Neurologic evaluation with Extended EEG may be required

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Summary

- RLS is characterized by 4 essential features:
  - An urge to move, usually associated with paresthesias
  - Onset or exacerbation of symptoms at rest
  - Relief of symptoms with movement
  - Symptoms manifesting in a circadian pattern

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Summary

- RLS in children – alternate criteria:
  - Four essential adult criteria plus two supportive criteria
- Supportive criteria
  - Sleep disturbance for age (including daytime sleepiness)
  - Biological parent or sibling with RLS
  - Sleep study documenting periodic limb movement index ≥5/h

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Summary

- Circadian Rhythm Disorders are common in children and adolescents
- Even if SDB present, look for other sleep disorders
- In Teens- be especially aware of DSPS and the possibility of sleep deprivation
- Elderly – consider advanced sleep phase
- Blind – consider non-24 (free running)

Summary

- Awareness of problem/ sleep needs of children
- Set a good example
  - Most adults are sleep deprived as well!
- Consistency important
- Sleep conducive environment
- Control use of electronics and caffeine
- Legislation
  - Driving restrictions for teens
  - School start times

Thank You

2013 Parents 10 BEST CHILDREN'S HOSPITALS

Stacey Ishman, MD, MPH
Surgical Director, Upper Airway Center
Multidisciplinary Treatment of OSA
stacey.ishman@cchmc.org