

Overview of Common Questionnaires to Assess Sleep Disorders in Children



Lisa J. Meltzer, Ph.D., CBSM
Associate Professor of Pediatrics
National Jewish Health

Website with Slides, Articles, and Questionnaires

<https://www.nationaljewish.org/sdu-assessment>

Overview

- Pros and cons of questionnaires
- How to choose the right questionnaire
- Outcomes commonly captured by questionnaires
- Review of most commonly used questionnaires
- Sleep diaries
- Choose your own questionnaire (case examples)

Questionnaires: Pros

- Quick and inexpensive way to screen for symptoms of sleep disorders
 - Useful in busy primary care practices
 - Helpful for triaging patients in high demand pediatric sleep practices
- Useful for monitoring progress with treatment recommendations
- Can be used in large research studies to capture many different sleep outcomes

Questionnaires: Cons

- Pediatric sleep questionnaires are **not** diagnostic tools
- Most validated questionnaires rely on parent report
 - Reporter bias
 - May not capture sleep disturbances in older children or adolescents (parents less involved/aware of sleep)

Factors to Consider When Choosing Questionnaires

- Over 300 subjective measures of sleep in children and adolescent
- Age of child
 - Infant, toddler/preschool, school-age, adolescent
- Length of measure, time to complete and score
- Respondent (parent, child, both)
- Outcomes of interest

Determining Outcomes of Interest: The PHD of Sleep

Sleep Patterns

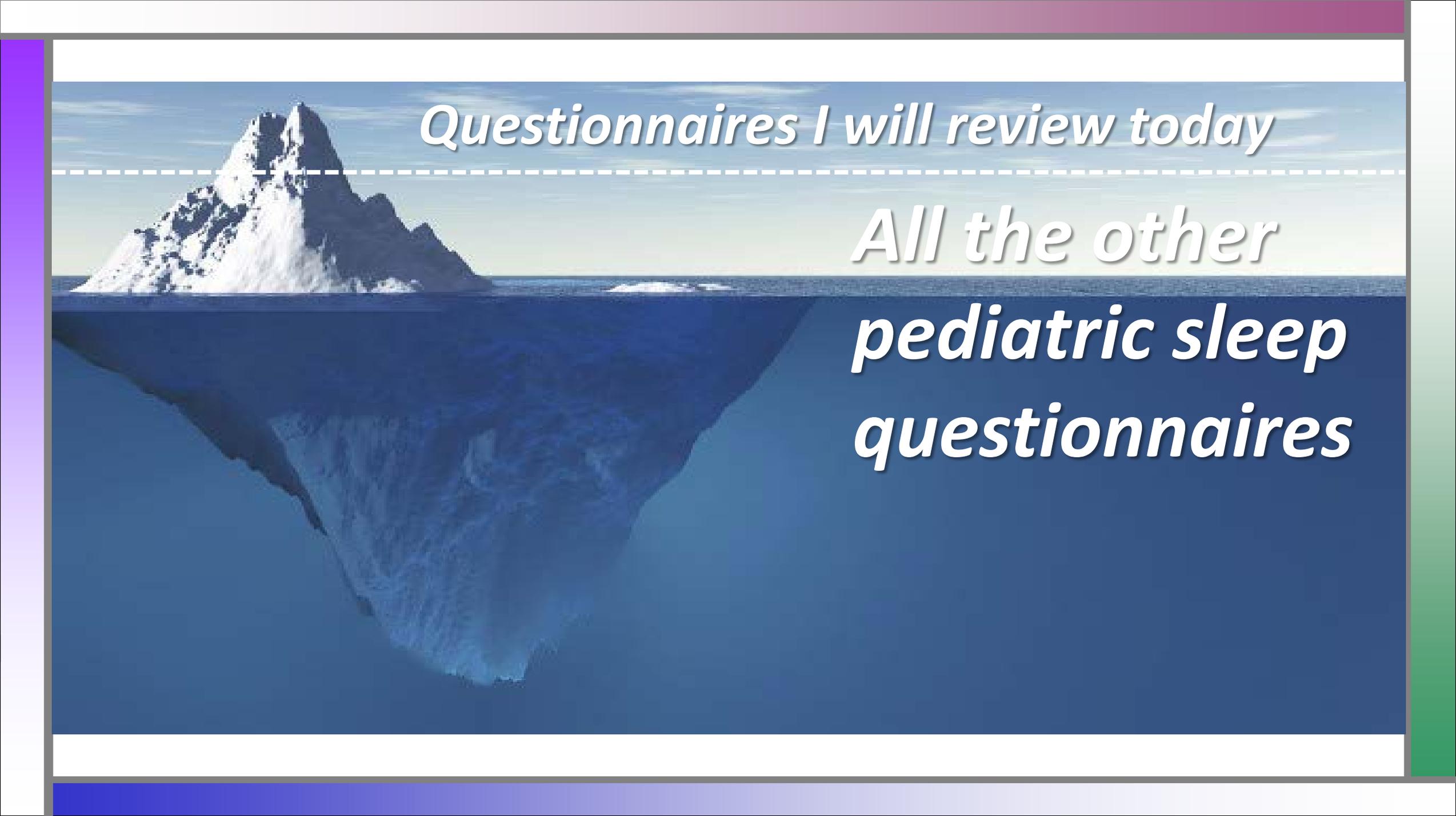
- Bed/Wake Time
- Sleep onset latency
- Sleep amount
- Night wakings
- Napping
- Sleep quality
- Circadian phase

Sleep Habits

- Sleep location
 - Fall Asleep
 - Wake Up
- Evening activities
- Bedtime routine
- Caffeine
- Electronics

Sleep Disturbances

- Insomnia
 - Bedtime problems
 - Night wakings
- Obstructive sleep apnea (OSA)
- RLS/PLMD
- Parasomnias
- Daytime sleepiness

An iceberg floating in the ocean. The tip of the iceberg is above the water line, while the much larger base is submerged. A horizontal dashed white line marks the water level. The sky is light blue, and the water is a deep blue. The text is overlaid on the image in white, italicized font with a drop shadow.

Questionnaires I will review today

*All the other
pediatric sleep
questionnaires*

Multidimensional Questionnaires

Measure	Age/ Reporter	# Items	Outcomes
Brief Infant Sleep Questionnaire (BISQ, Sadeh 2003)	0 – 3 y Parent	13/25	Sleep duration, sleep patterns, sleep location, sleep onset associations
Children's Sleep Habits Questionnaire (CSHQ, Owens et al 2000)	2 – 10 y Parent	45	Bedtime resistance, sleep onset delay, sleep duration, sleep anxiety, night wakings, parasomnias, SDB, EDS
Sleep Disturbance Scale for Children (SDSC, Bruni et al, 2007)	6 – 15 y Parent	27	DIMS, SDB, disorders of arousal, sleep-wake transition disorders, EDS, sleep hyperhydrosis
Children's Report of Sleep Patterns (CRSP, Meltzer et al 2013, 2014)	8 – 18 y Self	45	Sleep patterns, sleep quality, sleep habits, sleep disorders, EDS
Sleep Habits Survey (SHS, Wolfson et al, 2003)	12 – 18 y Self	58	Sleep schedule, EDS, sleep/wake problems (erratic sleep/wake behaviors)

Sleep Disorders

Measure	Age/ Reporter	# Items	Outcomes
Sleep Disordered Breathing			
Pediatric Sleep Questionnaire (PSQ, Chervin et al., 2000)	2y – 18y Parent	22	Snoring, EDS, behavior, other symptoms of SDB
OSA-18 (Franco et al., 2000)	6m – 12y Parent	18	Sleep disturbances, physical symptoms, emotional distress, daytime function, caregiver concerns
Insomnia			
Pediatric Insomnia Severity Index (Byars et al., 2016)	4y – 10y	6	Sleep onset problems, sleep maintenance problems
Dysfunctional Beliefs and Attitudes About Sleep (Gregory et al., 2009)	8y – 13y	24/10	Consequences, control, sleep requirement, attributions, sleep promoting practices

Sleep Disorders

Measure	Age/ Reporter	# Items	Outcomes
Daytime Sleepiness			
Modified Epworth Sleepiness Scale (mESS, Melendres et al., 2004)**	2 – 18 y Self/Par.	8	Sleepiness **ESS-CHAD
Pediatric Daytime Sleepiness Scale (PDSS, Drake et al., 2003)	11 – 15 y Self	8	Sleepiness
Circadian Rhythm			
Morningness/Eveningness Scale for Children (M/E, Carskadon et al., 1992, 1993)	11 – 12 y Self	10	Circadian preference
Children's ChronoType Questionnaire (CCTQ, Werner et al., 2009)	4 – 10 y Parent	27	Midsleep on free days, circadian preference, chronotype

Patient Reported Outcomes

Measure	Age/ Reporter	# Items	Outcomes
PROMIS Pediatric Sleep Disturbance (Forrest et al., 2018, Bevans et al., 2018)	8-17 y Self, 5-7 y Parent	4-15	Sleep onset, sleep continuity, sleep quality
PROMIS Sleep Related Impairment (Forrest et al., 2018, Bevans et al., 2018)	8-17 y Self, 5-7 y Parent	4-13	Daytime sleepiness, impact: affective and behavior, activities, cognitive
PROMIS Pediatric Sleep Practices (Meltzer et al., 2017)	8-17 y Self, 5-7 y Parent	11	Bedtime routine, electronics use at bedtime, consistent BT routine, consistent schedule, parent present at sleep onset, sleep schedule

Sleep Diary

- Subjective, prospective record of sleep
- Sleep patterns (bedtime, wake time, sleep onset latency, night waking frequency/duration, napping)
- Can include other notes/information (quality, caffeine use, sleep walking episodes)
- Different formats

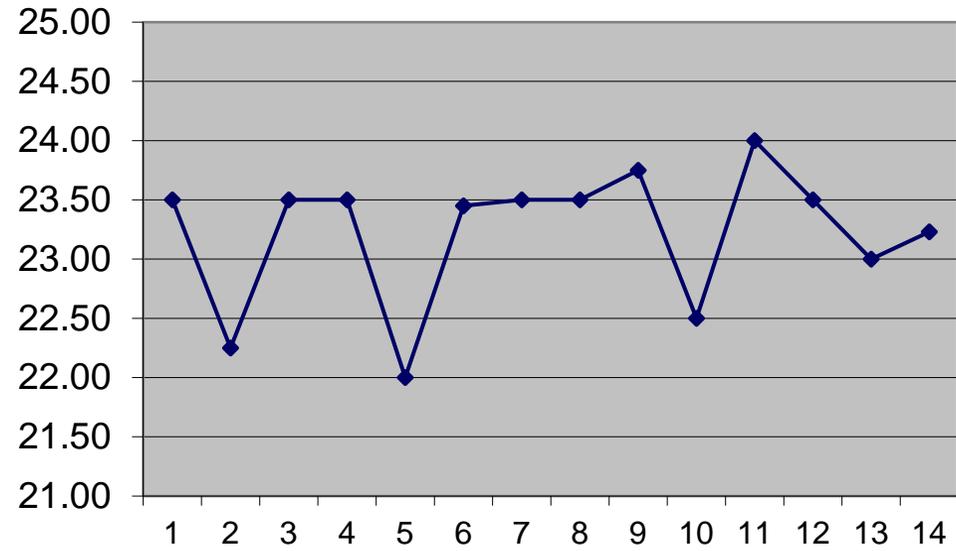
Sleep Diary – Table Version

SLEEP DIARY

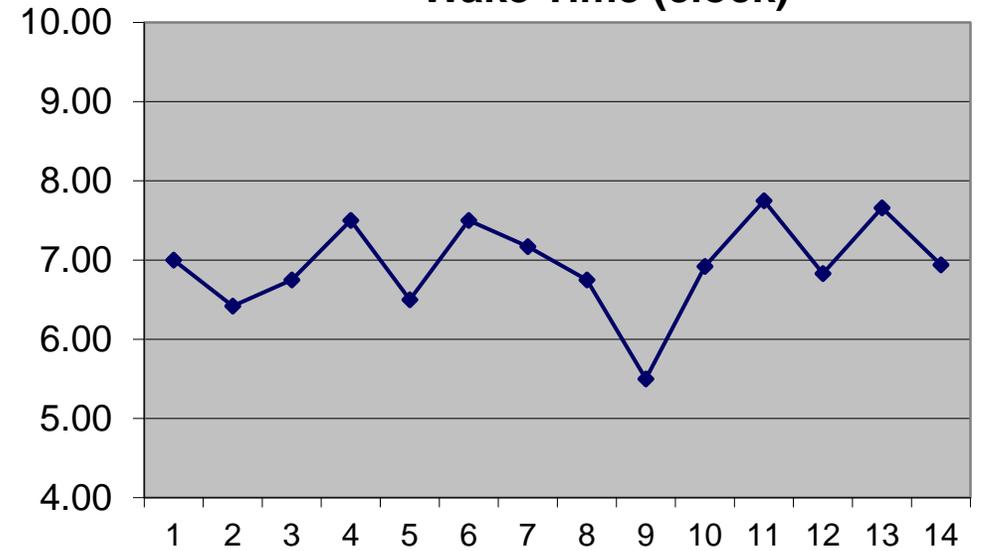
Name: _____

Today's date	4/5/11							
What time did you get into bed?	10:15 p.m.							
What time did you try to go to sleep?	10:30 p.m.							
How long did it take you to fall asleep?	1 hour							
How many times did you wake up, not counting your final awakening?	3 times							
In total, how long did these awakenings last?	1 hour 30 min							
What time was your final awakening?	6:30 a.m.							
What time did you get out of bed for the day?	6:45 a.m.							
How would you rate the quality of your sleep?	Very poor Poor Fair Good Very good							
Comments (if applicable)	I have a cold							

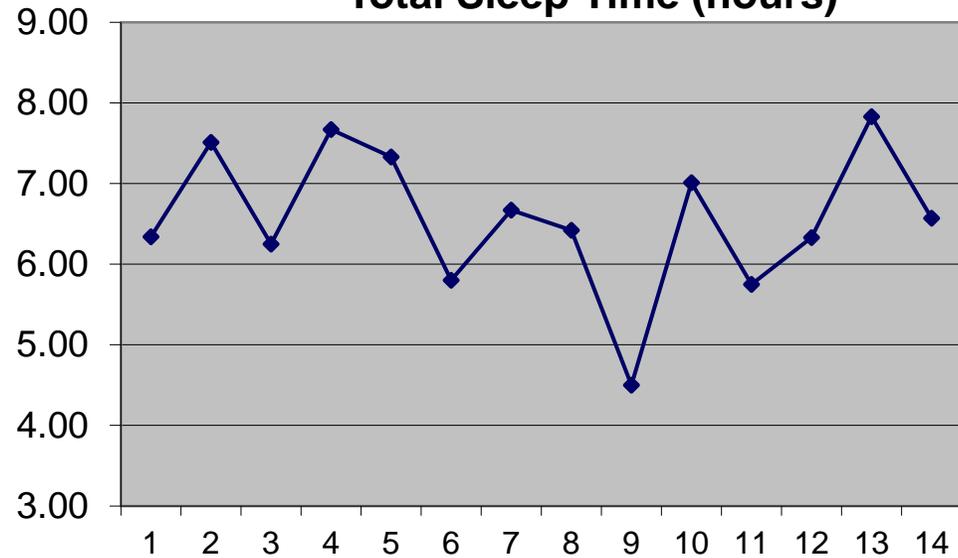
Bedtime (24h clock)



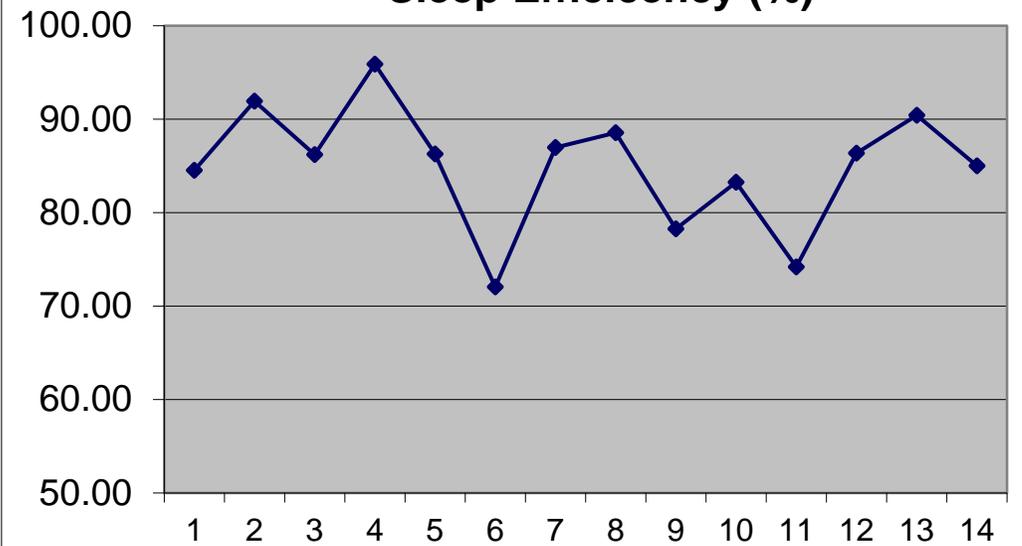
Wake Time (clock)



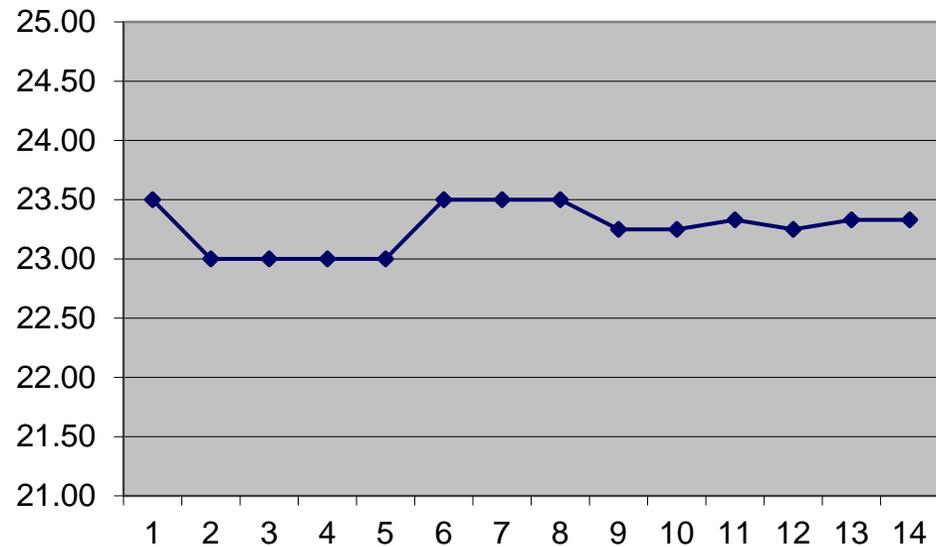
Total Sleep Time (hours)



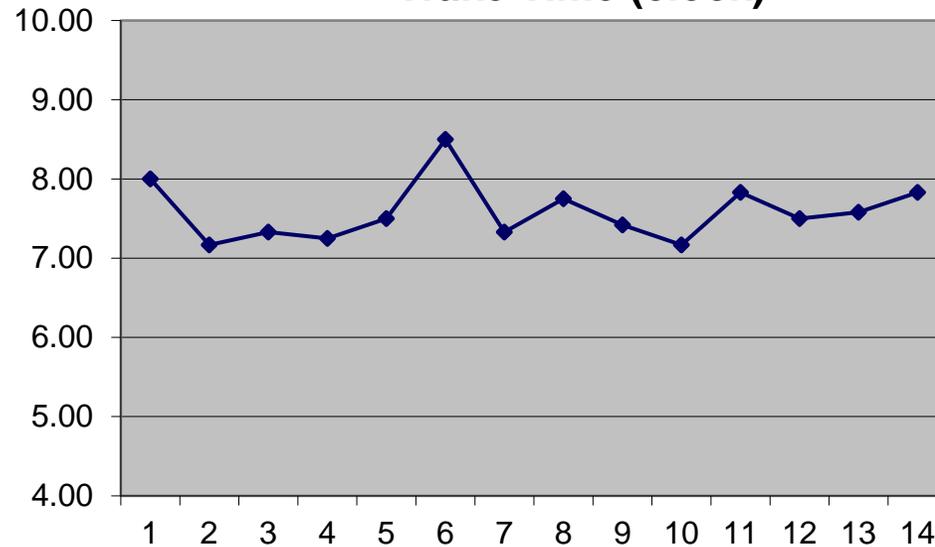
Sleep Efficiency (%)



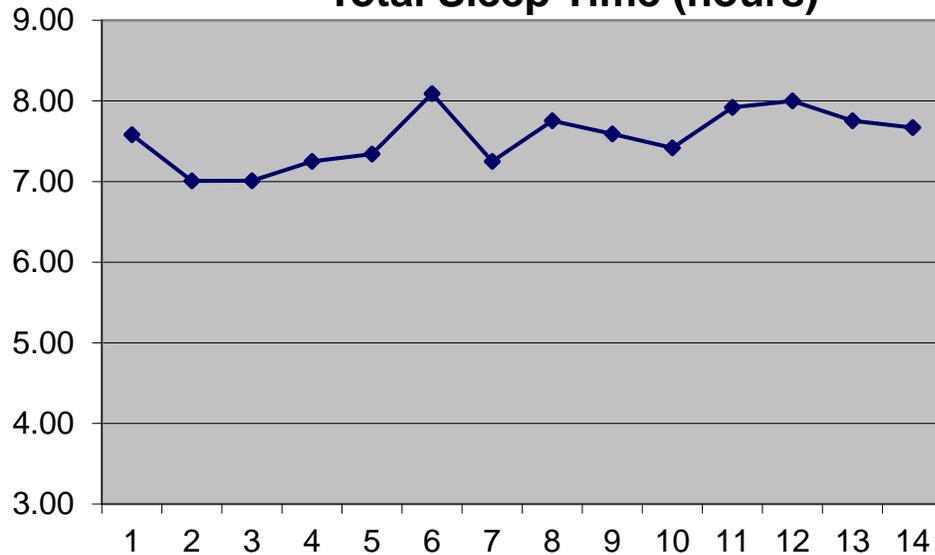
Bedtime (24h clock)



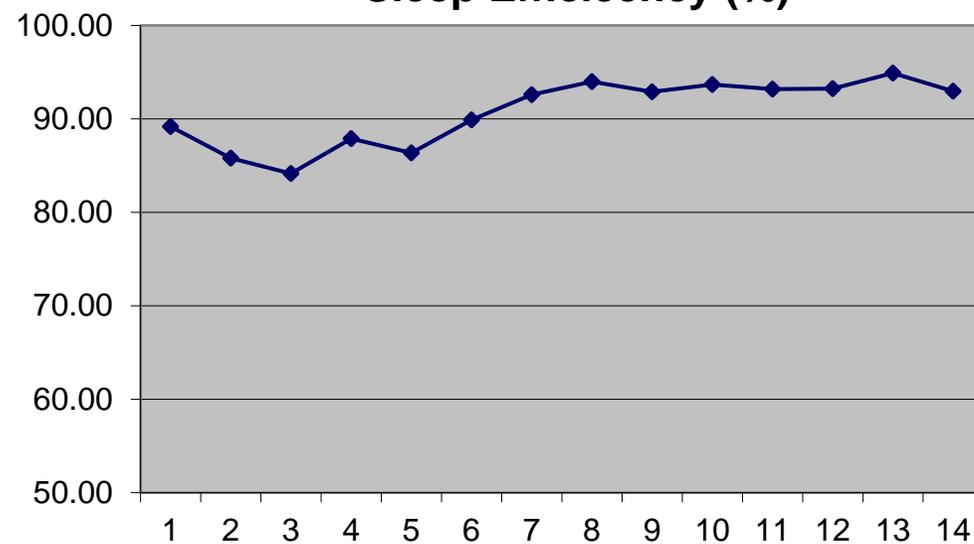
Wake Time (clock)



Total Sleep Time (hours)



Sleep Efficiency (%)



3 yr old male, seasonal allergies

Day	6p	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	Comments
Monday 6/11			↓	████████	████████	████████	████████	████████	████████	████████	████████	████████	↑				██		↓	████████	↑				Tried to nap in car 10:15am Rocked 12pm - 1pm
Tuesday 6/12			↓	████████	████████	████████	████████	████████	████████	████████	████████	████████	████████	↑						↓	████████	↑			Minor wakeups w/ mumbling then back to sleep
Wednesday 6/13			↓	████████	████████	████████	████████	████████	████████	████████	████████	████████	████████	↑						↓	████████	↑			" "
Thursday 6/14			↓	████████	████████	████████	████████	████████	████████	████████	████████	████████	████████	↑						↓	████████	↑			Very sad & wanted more @ wakeups even though naps was in same bed
Friday 6/15			↓	████████	████████	████████	████████	████████	████████	████████	████████	████████	████████	↑			██			████████	↑				1st nap in car, 2nd nap started in car
Saturday 6/16			↓	████████	████████	████████	████████	████████	████████	████████	████████	████████	████████	████████	↑						████████	↑			" "
Sunday 6/17			↓	████████	████████	████████	████████	████████	████████	████████	████████	████████	████████	████████	↑				↓	████████	↑				
Monday 6/18			↓	████████	████████	████████	████████	████████	████████	████████	████████	████████	████████	████████	↑					↓	████████	↑			
Tuesday 6/19			↓	████████	████████	████████	████████	████████	████████	████████	████████	████████	████████	████████	████████					↓	████████	↑			

16 yr old male, ADHD, asthma, allergies

Date Started: / / Date Ended: / /

List Medications: Adderall, Albuterol, Zyrtec, Singular

Day	Midnight												Noon					Comments						
	6p	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10		11	12	1	2	3	4
7/18								↓																
7/19																								
7/20								↓																
7/21								↓																
7/22								↓																
7/23								↓																
7/24								↓																
7/25								↓																
7/26								↓																
7/27								↓																
7/28								↓																
7/29								↓																
7/30								↓																
7/31								↓																

post wisdom teeth

17 year old female, depression

Day	Midnight												Noon											
	6p	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5
3/8					↓	↓	↓	↑			↓	↓	↓	↑										
3/9				↓	↓	↓	↓				↓	↓	↓	↑										
3/10			↓	↓	↓	↓	↓				↓	↓	↓	↑										
3/11				↓												↑								
3/12				↓										↑										
3/13				↓										↑										
3/14				↓										↑										
3/15				↓										↑										
3/16			↓	↓	↓	↓					↓	↓	↓	↑										
3/17				↓	↓	↓					↓	↓	↑											
3/18																↑								
3/19				↓	↓	↓	↓				↓	↓	↑											
3/20				↓	↓	↓	↓				↓	↓	↓	↑										
3/21				↓									↑											

AWAKE IN BED

2ND ATTEMPT TO WAKE

ALARM

Review

- In clinical practice questionnaires useful to screen patients and/or monitor treatment
- In research questionnaires inexpensive way to collect a number of different sleep outcomes
- Cannot solely rely on questionnaires for diagnosis of sleep disorder
- Reporter bias may impact outcomes

Thank You!!

Lisa J. Meltzer, Ph.D., CBSM
National Jewish Health
meltzerL@njhealth.org

