

# Sleep Problems in Children with Developmental Disabilities

DD Plus Update on Diagnosis and Treatment

Adrian Sandler MD

Developmental-Behavioral Pediatrics

Olson Huff Center

# ID - Associated conditions

	Mild ID	Severe ID
Seizures	10%	20%
Hearing impairment	7%	10%
Vision impairment	1%	15%
Cerebral palsy	10%	20%
<b>Sleep disorders</b>	<b>30</b>	<b>75%</b>
Recurrent vomiting		10%
Autism	12%	30%
Psychiatric disorders ("Dual diagnosis")	30%	50%

# Impact of sleep problems

- *Short term*

- Somnolence, hyperactivity, disorganization
- Risk-taking, injuries, school absence
- Mood dysregulation, aggression, exacerbation of behavior problems
- Parenting stress

- *Long term*

- School failure
- Substance abuse
- Obesity
- Lifelong insomnia



# Elements of sleep history

- Bed-time routine
- Time in bed (sleep associations)
- Bed-time behaviors and symptoms
- Sleep latency (from bed-time until sleep onset)
- Night-time arousals and parasomnias
- Sleep-related breathing
- Sleep inertia (time until really awake)
- Morning activities and afternoon/evening activities
- Daytime sleepiness
- Access to media (especially in bedroom)
- Weekend schedule
- Caffeine, medications
- Family sleep habits, family history of OSA, depression, parasomnias, family stress

# Classification of sleep problems

- Sleep *Onset*
- Sleep *Maintenance* (night-time awakenings)
- Sleep *Quality*

*May be one or more issues to address...the use of a sleep log*



# Sleep onset problems

- Inadequate sleep hygiene Z72.821
  - Lack of routine, schedule, inadequate environmental cues, family stress
  - Interventions – short, sweet, consistent bedtime routines
  - Consistent wake up time
  - Healthy diet, exercise, outdoor play
- Limit-setting sleep disorder G47.8, Z73.811
  - Inadequate enforcement of bed times, delaying tactics, refusals, prolonged latency
  - Interventions – Bed is only for sleep, ignoring unnecessary calls
  - Positive reinforcement, motivational strategies, e.g., bed-time pass
  - Re-associate bed-time routine with sleep
    - Delay bed-times to shorten latency, then gradually advance
    - May use melatonin, antihistamine or alpha-adrenergic meds short-term

# Sleep maintenance problems

- Sleep onset association disorder G47.8, Z73.810
  - Return to sleep is impaired by absence of person or circumstances (TV)
  - Interventions – help child to develop healthy sleep associations – “we don’t go to sleep with anything that won’t be there when we wake up – and we will wake up!”
  - Goal is for child to fall asleep independently
  - Extinction vs graduated extinction (Ferber method) – both effective and safe
  - Child should be securely attached
- “Trained night awakening” Z73.811
  - Learned pattern of awakening reinforced by parental attention

Bed-sharing – more common in Africa and Asia, wide variability

- Intentional reasons – breastfeeding, child/parent emotional needs, ideological, necessity
- Unintentional reasons – child’s irritability, anxiety, convenience, parental insecurity

# Night terrors and nightmares

- Night terrors (F51.4) and other parasomnias
  - Non-REM, slow wave sleep, 1<sup>st</sup> third of the night, no recall
  - Intervention – don't try to awaken, insure safety, gently redirect
  - Try gentle arousal and settling after sleep onset (change sleep architecture)
  - Brief trial of clonazepam
- Nightmares (F51.5)
  - REM sleep, last 3<sup>rd</sup> of night, recall/awareness
  - Intervention – reassurance, re-scripting, cognitive behavior therapy
- Consider trauma, anxiety, medications, OSA, iron deficiency

# Sleep quality problems

- Obstructive sleep apnea (G47.33) and sleep-disordered breathing (G47.30)
  - Upper airway obstruction leading to fragmented sleep architecture
  - Sleep not fully restful or restorative
  - Intervention – open up the airways, lose weight
- Restless Legs syndrome 780.52-5
  - Creeping uncomfortable urge to move, fleeting relief, at sleep onset
  - May be associated with emotional dysregulation
- Periodic Limb Movements disorder 780.52-4
  - Sleep fragmentation and daytime fatigue
  - May not be aware of the movements
  - Intervention – sleep hygiene, supportive counseling
  - Iron supplementation (prescription)– push ferritin up to 80-100

# Sleep problems in children with I/DD

- ASD
  - 50-80% prevalence of sleep problems - onset and maintenance
  - Role of neurotransmitter dysregulation? Mostly behavioral
  - Dysregulated arousal and anxiety may affect sleep maintenance
  - Lack of socially reinforced zeitgebers – circadian shift G47.20
- ADHD
  - Also highly prevalent
  - Limit-setting sleep disorder very common in oppositional children
  - Consider effects of stimulants on sleep latency
  - Consider effects of alpha adrenergics on sleep disruption/nightmares
- Vision impairment
  - Circadian dysregulation – free running type G47.24
- Smith Magenis

# Medications for sleep problems

- Generally off label
- All may help with sleep onset, none likely to help with sleep maintenance
- Herbals – no more effective than placebo
- Melatonin – 1-3 mg 1 hour before bed-time may be sedating for some (20%)
  - RCT evidence for modest improvement in latency and total sleep
  - Increased doses are no more effective and safety not established
- Ramelteon – melatonin agonist – no available pediatric data
- Antihistamines – hydroxyzine, diphenhydramine – paradoxical irritability, hangover
- Alpha adrenergics – short-acting clonidine and guanfacine – mild anxiolytic
  - Suppresses REM – more awakenings, effects on learning?
  - Narrow safety margin – avoid high doses
- Benzodiazepines – sedative/anxiolytic - tolerance and habit formation – rarely used
- Non-benzo receptor agonists – zolpidem - very limited data in children
- Atypical antidepressants - trazodone (5HT agonist) – widely used, limited data

# “Targeted combined therapy”

The PCMH has important responsibility to prevent *pharmacodesperation* by weaning and discontinuing unnecessary or harmful medications.

*“Thanks for the referral. I’ve started him on fluoxetine for his compulsive behavior, clonidine for his tics, risperidone for his aggression, trazodone to help him sleep, and 25 mg imipramine...for old time’s sake.”*



# Keys to effective management of sleep problems

- Take a good sleep history
- Make a clear diagnosis and explain the intervention
- Motivational interviewing techniques – readiness to change
- Use of sleep log
- Directive counseling and parent support
- Melatonin 1-3 mg may help shorten sleep latency
- Judicious use of antihistamines and low-dose alpha-adrenergics if needed