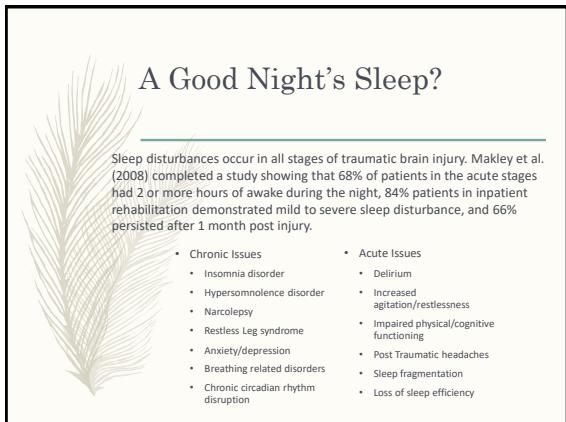


**Interventions
Enhancing
Sleep Quality
for People
with
Traumatic
Brain Injuries**

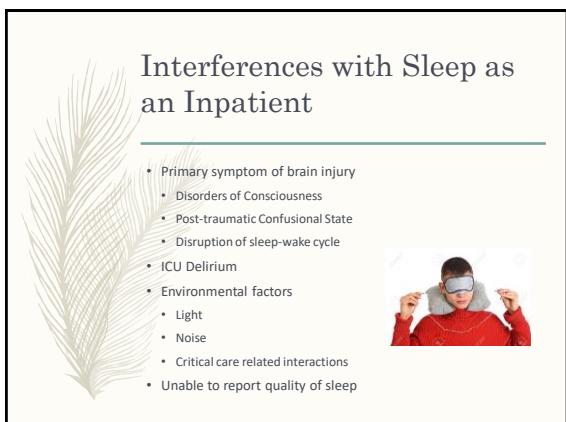
By: Judy Wilson, OTR/L and
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A Good Night's Sleep?

Sleep disturbances occur in all stages of traumatic brain injury. Makley et al. (2008) completed a study showing that 68% of patients in the acute stages had 2 or more hours of awake during the night, 84% patients in inpatient rehabilitation demonstrated mild to severe sleep disturbance, and 66% persisted after 1 month post injury.

<ul style="list-style-type: none"> • Chronic Issues <ul style="list-style-type: none"> • Insomnia disorder • Hypersomnolence disorder • Narcolepsy • Restless Leg syndrome • Anxiety/depression • Breathing related disorders • Chronic circadian rhythm disruption 	<ul style="list-style-type: none"> • Acute Issues <ul style="list-style-type: none"> • Delirium • Increased agitation/restlessness • Impaired physical/cognitive functioning • Post Traumatic headaches • Sleep fragmentation • Loss of sleep efficiency
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Interferences with Sleep as an Inpatient

- Primary symptom of brain injury
 - Disorders of Consciousness
 - Post-traumatic Confusional State
 - Disruption of sleep-wake cycle
- ICU Delirium
- Environmental factors
 - Light
 - Noise
 - Critical care related interactions
- Unable to report quality of sleep



Disorders of Consciousness

- Impact of sleep on disorders of consciousness
 - Coma
 - Vegetative state
 - Storming episodes
 - Minimal conscious state
 - Sleep patterns and sleep architecture (Cologan et al., 2010)
 - Principal goal is to develop a sleep-wake cycle
 - Sensory regulation program
 - Environment/treatment modifications

Post-traumatic Confusional State

- Form of Delirium
- Constellation of Symptoms
 - Disorientation
 - Fluctuation in presentation
 - *Impaired sleep-wake cycle*
 - Motor activity alterations
 - IMPAIRED ATTENTION– cardinal symptom
- Progression of daytime arousal

(Stuss et al., 1999; Sherer, Yalon, & Nakase-Richardson, 2009)

Impaired Sleep-wake Cycle

- Krueger, Obál, Kapás, and Fang (1995)'s theory of sleep function poses sleep as a vital tool in brain organization. They postulate that sleep provides "a pattern of stimulation to preserve the critical populations of synapses insufficiently stimulated during wakefulness." (Krueger et al., 1995, p. 178) According to this theory, sleep maintains the breadth of neuronal groups that allow the brain to adapt to change.
- Relation with light/dark cycles
- How does this impact the other symptoms of PTCS?

ICU Delirium

- An acute and fluctuating disturbance of consciousness and cognition
 - Hypervigilant, hypoactive, and mixed
 - Symptoms:
 - Agitation/aggression
 - Confusion
 - Inappropriate behavior/language
 - Disorientation
 - Change in sleep habits*
 - Emotional changes
 - Abnormal movements
 - Hallucinations
 - Relationship between sleep deprivation and ICU delirium (Weinhouse et al. 2009)



Sleeping on a Problem

- Impact on patients
 - Decline in cognitive and physical recovery
 - Higher rates of functional disability
 - Abnormal activity/sleep cycles
 - Decreased in social functioning
 - Prevalence to chronic issues
 - Longer hospitalizations
 - Higher cost of rehabilitation

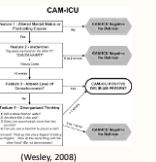


Recovery Needs a Good Sleep

- Team approach
 - Every team member has a role and understanding
 - Create communication pathway
 - Ongoing assessment
 - Accurate, objective assessments
 - Assessment throughout out transition of care
 - Interventions
 - Quiet environment
 - Hours of critical care needs
 - Family/patient education
 - Education to team members

Assessing Sleep Patterns

- Observations
 - Logging hours
 - Number of continuous hours of sleep
 - Sleep quality
 - Tools
 - CAM ICU
 - COPM
 - Epworth Sleepiness Scale



(Wesley, 2008)

Environmental Modifications

- Creating a relaxing environment
 - Dark/light cycles
 - Dimming lights, closing blinds
 - Comfortable bedding/pillows
 - Temperature
 - Block out distracting stimuli
 - Reserve the bed for sleep only
 - Positioning
 - Personalize the environment



Personal Habits

- Establish a routine
 - Sensory regulation schedule
 - Dietary changes
 - Medication management
 - Sleep preparations
 - Exercise/physical activity in morning
 - Taking a warm bath/shower
 - Finding what works for the patient



Assisted Devices

- Weighted blankets
- Pillows for positioning
- Dreampad pillow
- Eye masks
- Ear plugs
- White noise machines
- Light box



Mind/Body Activities

- Meditation
 - iRest app, headspace, etc.
- Yoga
- Deep breathing
- Sleep preparation routine
- Tai chi
- Guided Imagery
- Muscle relaxation



Cognitive Behavioral Interventions

- Positive self talk/thoughts
- Identifying barriers to sleep
- Sleep diary
- Improvement of sleep beliefs
- Addressing anxiety, depression, PTSD, etc..
- Co-treatment with neuropsychologist

After Discharge

- Home preparation
 - Family Education
 - Environment
 - Tools to use at home
- Outpatient treatment
 - Returning to work
 - Continuing education and intervention
- Long-term
 - Assessment through recovery
 - Continuing intervention



Tell me about you?

- How is your team looking at sleep for your patients?
- How do you evaluate/assess sleep for patients with traumatic brain injury?
- How do you incorporate importance of sleep in intervention?
- Have you been able to incorporate the whole team?
- What strategies are you using with your patients?

Now let's all get some rest!!



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