USING SLEEP MEDICINE TO SOLVE DIFFICULT NEUROLOGIC CASES

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Sleep With Patients in Multiple Sclerosis:

Background:
Multiple sclerosis is a chronic inflammatory and neurodegenerative autoimmune disease of the central nervous system with most likely multi-factorial pathogenesis. This disease process predominantly affects young adults and at least one out of four patients views fatigue is the most burdensome symptom and ultimately is the major reason for reduced employment early retirement and decreased wall quality-of-life. As nearly 80% of patients with MS will experience fatigue the symptom is commonly attributed to the underlying pathology. As a further challenge fatigue is an unspecific indicator of many underlying processes including depression, sleep disorders, anemia, renal failure, liver diseases, chronic obstructive pulmonary disease, drug side effects, infections, cancer, thyroid disease and overall lack of physical exercise. Consequently sleep disorders are frequently overlooked or unrecognized in this population. However, timely diagnosis and ultimate treatment of the sleep issues offer opportunity to improve the overall quality of life and may alter the underlying immune process. The primary mechanisms for the fatigue and MS is largely speculative but MS itself may also play a role in sleep regulation by changing axonal integrity the production of inflammatory mediators and thus chemical disruption of the homeostatic drive for sleep, as well as interference with the mechanisms for the maintenance of wakefulness.

Patients with MS may have a high prevalence of underlying sleep disorders including sleep apnea insomnia and restless leg syndrome. In a recent study, patients with MS who had evidence of brainstem lesions on MRI were found to have more severe obstructive sleep apnea and central sleep apnea than control subjects highlighting the importance of central neurological lesions producing both obstructive and central apnea. While these patients may have classic symptoms of obstructive sleep apnea many times they may not have significant snoring nor report their symptoms similarly to other patients with sleep apnea. Additionally, patients with lesions in the spinal cord are also noted to have increased periodic limb movements during sleep and these movements may disturb the sleep of the patient. Patients with MS may have decreased activity during the day and thus are also susceptible to a decreased circadian rhythm from their environment and lack of activities.

Investigation:
As fatigue is often difficult to distinguish from sleepiness this decreased sense of energy requires a variety of approaches. Framework to first identify patients with fatigue is to use a simple survey such as the Fatigue Severity Scale. This brief scale can be used with the Epworth sleepiness scale to help distinguish fatigue and sleepiness. The difference can be difficult to distinguish yet if we define fatigue as the feeling of lack of energy and sleepiness is the presence of the to fall asleep, disparity between the two scales may help delineate the symptoms for the clinician. Additional questions such as:

1. Determining that the patient is dedicating enough time for sleep,
2. Assuring that the patient is not having something disrupt their sleep
3. Investigating for other signs of sleep disruption such as snoring or excessive movement
4. Determining the patient's sleep-wake schedule is not misaligned with the environment
5. Looking at the overall patients clues to maintain wakefulness during the day
6. Reviewing medication schedule to assure most somnolent genic medications are at night

If the clinician is concerned sleep disruption, an overnight sleep study a be helpful in distinguishing specific physiological disorders causing sleep disruption such as sleep-related breathing disorders or sleep-related movement disorders. Similarly in the clinic the Pittsburgh sleep quality index which is a 19 item self rated measure of sleep quality can give clues to a variety of sleep disorders. In patients for which there is concern for obstructive sleep apnea the STOP-BANG questionnaire is well validated and scores of 3 or higher indicate elevated risk for obstructive sleep apnea. Similarly patients being asked about restless leg syndrome by using a validated screening question: "When you try to relax in the evening or sleep at night do you ever have unpleasant restless feelings in your legs that can be relieved by walking or movement?"

Patients with MS may also complain of insomnia for which the Pittsburgh sleep quality index may be helpful to identify underlying etiologies. Key attention to details regarding caffeine intake, medication type and timing, variability in sleep-wake schedule, daytime activity and light during the day, as well as investigating the bedroom environment is conducive to sleep promotion at night. Many patients with MS and insomnia may use over-the-counter sleep aids such as antihistamines to help her sleep and this can both increase their limb movements at night as well as their daytime fatigue.

Management:
Management of sleepiness in patients with MS can be challenging. Addressing the sleep disorders as the root cause for daytime sleepiness will improve the patient's overall quality of life. For patients with sleep apnea, PAP titration and therapy can be effective. Additionally improving daytime activity and exercise as well as the improvement in exposure to circadian clues during the day such as bright light, activity and regular mealtimes may provide added benefit. Similarly cognitive behavioral therapy focused on improvement of insomnia may benefit. Patients with RLS symptoms or excessive periodic limb movements in sleep may benefit from the use of a dopamine agonist or gabapentinoid medication to reduce the limb movements at night. For patients without clear sleep disorder some investigators report that 4-aminopyrdine as well as vitamin D3 may help the daytime symptoms of fatigue. Similarly, modafinil has been used to improve residual daytime sleepiness but a randomized study failed to show significant difference in fatigue scores.

References:

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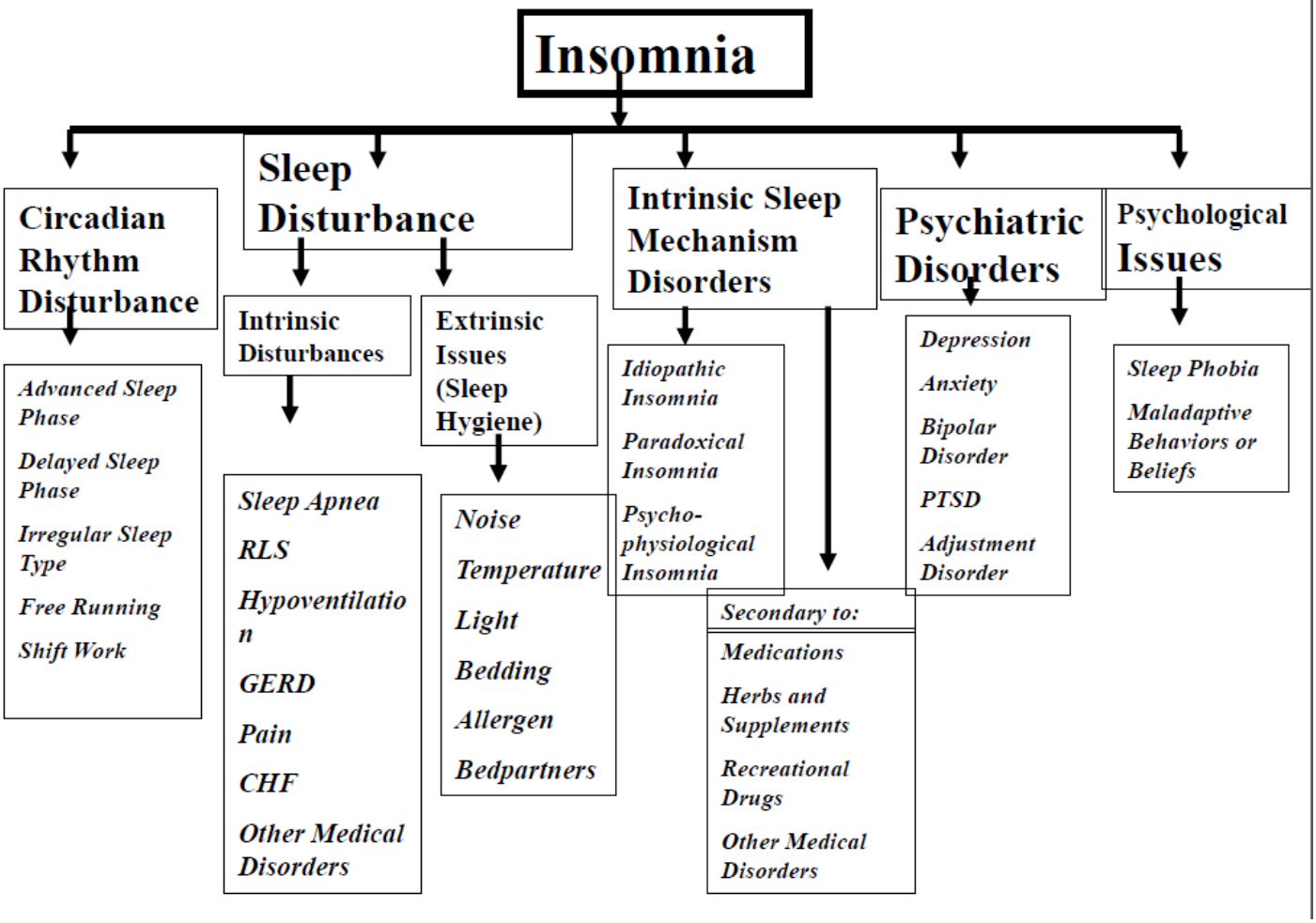
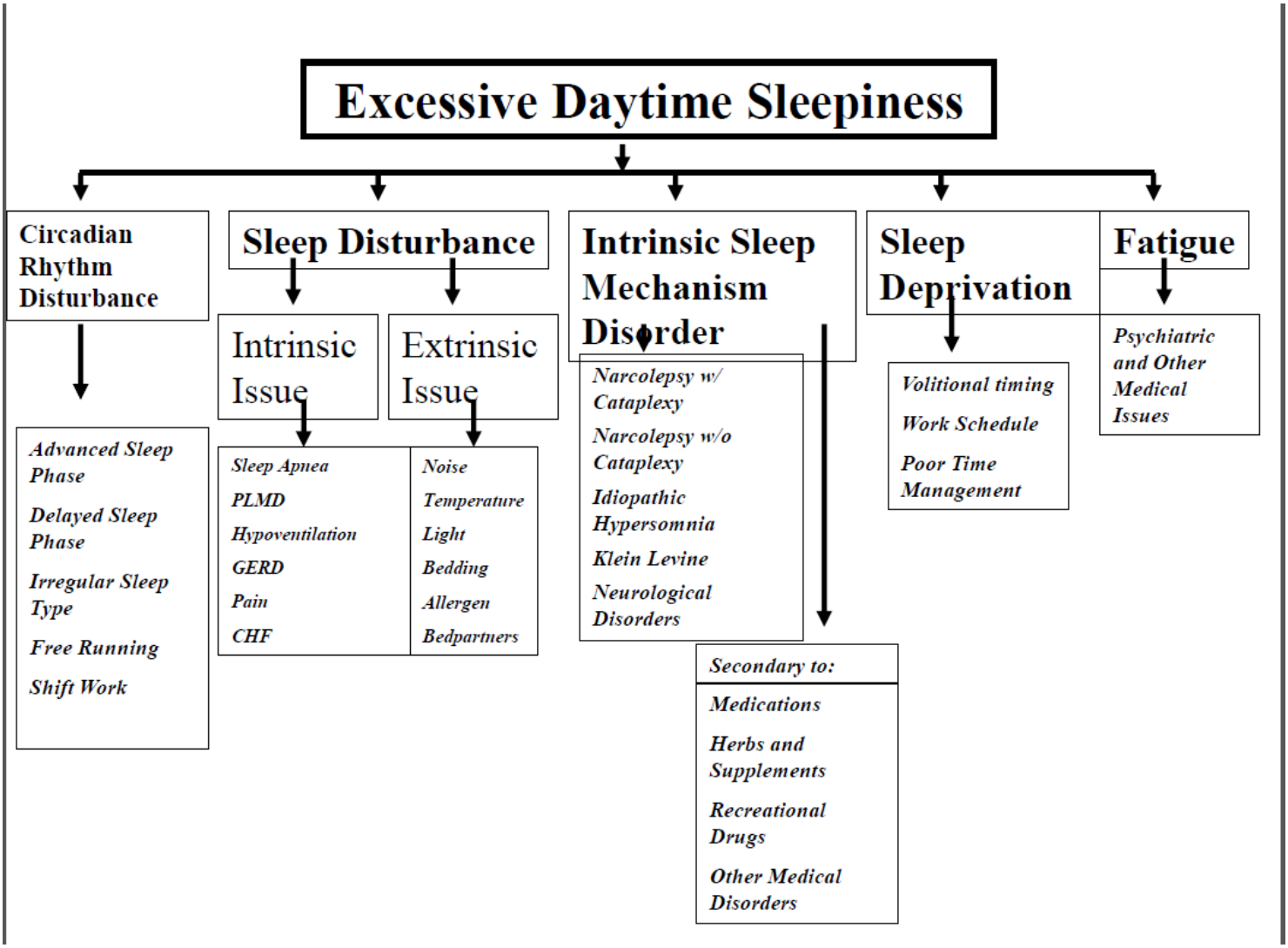
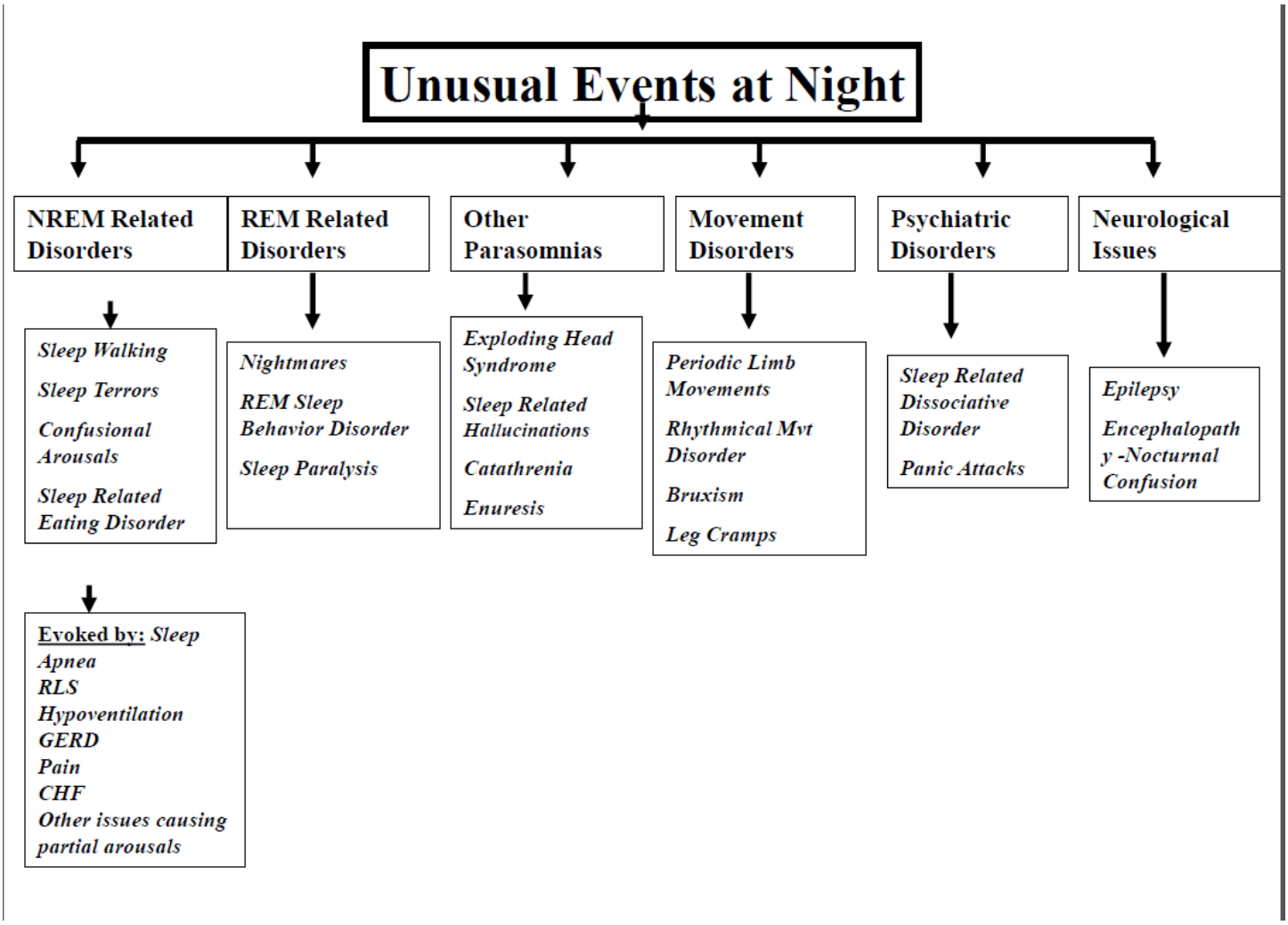

Insomnia
Circadian Rhythm Disturbance
Advanced Sleep Phase
Delayed Sleep Phase
Irregular Sleep Type
Free Running
Shift Work
Sleep Disturbance
Intrinsic Disturbances
Sleep Apnea
RLS
Hypoventilation
GERD
Pain
CHF
Other Medical Disorders
Extrinsic Issues (Sleep Hygiene)
Noise
Temperature
Light
Bedding
Allergen
Bedpartners
Intrinsic Sleep Mechanism Disorders
Idiopathic Insomnia
Paradoxical Insomnia
Psycho-physiological Insomnia
Secondary to:
Medications
Herbs and Supplements
Recreational Drugs
Other Medical Disorders
Psychiatric Disorders
Depression
Anxiety
Bipolar Disorder
PTSD
Adjustment Disorder
Psychological Issues
Sleep Phobia
Maladaptive Behaviors or Beliefs


Excessive Daytime Sleepiness
Circadian Rhythm Disturbance
Advanced Sleep Phase
Delayed Sleep Phase
Irregular Sleep Type
Free Running
Shift Work
Sleep Disturbance
Intrinsic Issue
Sleep Apnea
PLMD
Hypoventilation
GERD
Pain
CHF
Extrinsic Issue
Noise
Temperature
Light
Bedding
Allergen
Bedpartners
Intrinsic Sleep Mechanism Disorder
Narcolepsy w/ Cataplexy
Narcolepsy w/o Cataplexy
Idiopathic Hypersomnia
Klein Levine
Neurological Disorders
Secondary to:
Medications
Herbs and Supplements
Recreational Drugs
Other Medical Disorders
Sleep Deprivation
Volitional timing
Work Schedule
Poor Time Management
Fatigue
Psychiatric and Other Medical Issues


Unusual Events at Night
NREM Related Disorders
REM Related Disorders
Other Parasomnias
Movement Disorders
Psychiatric Disorders
Neurological Issues
Sleep Walking
Sleep Terrors
Confusional Arousals
Sleep Related Eating Disorder
Nightmares
REM Sleep Behavior Disorder
Sleep Paralysis
Exploding Head Syndrome
Sleep Related Hallucinations
Catathrenia
Enuresis
Periodic Limb Movements
Rhythmical Mvt Disorder
Bruxism
Leg Cramps
Sleep Related Dissociative Disorder
Panic Attacks
Epilepsy
Encephalopathy -Nocturnal Confusion
Evoked by: Sleep Apnea
RLS
Hypoventilation
GERD
Pain
CHF
Other issues causing partial arousals