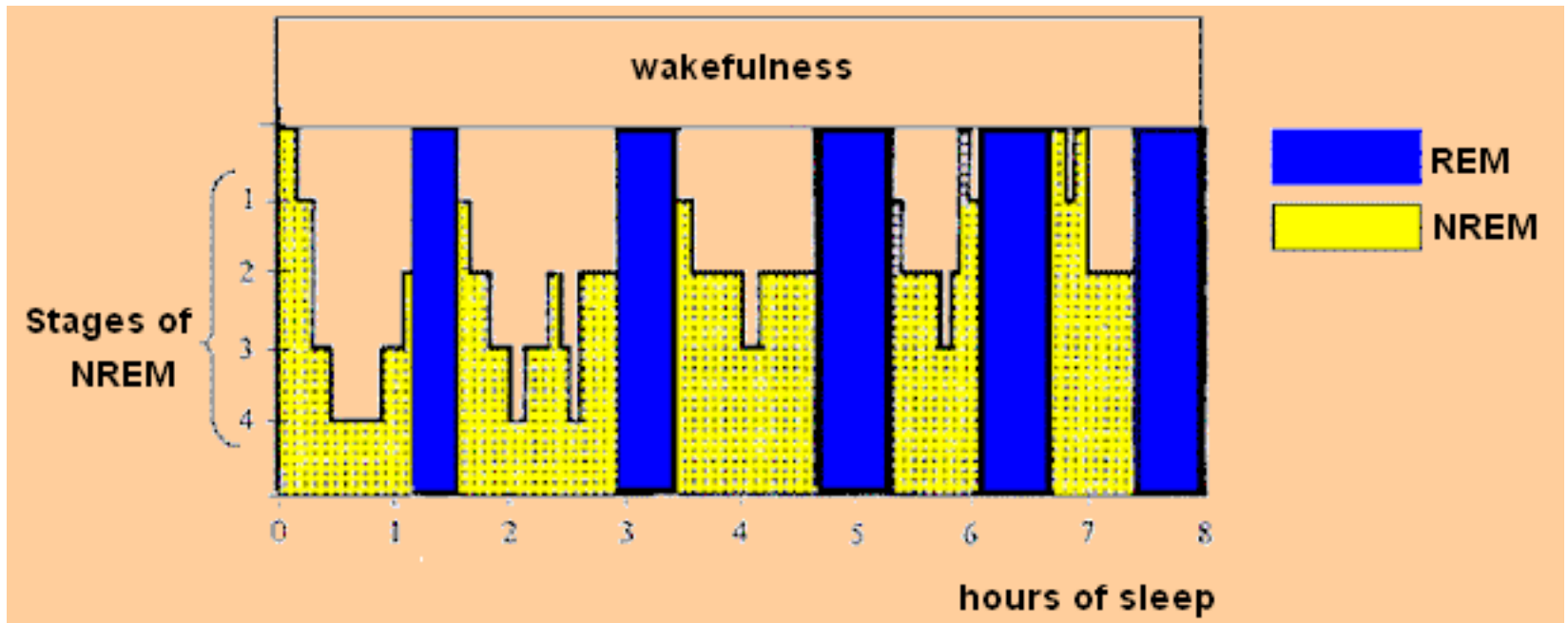


# **Sleep psychophysiology**

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# A typical night sleep



# Functions of Sleep

- 1. Conservation of energy (5-25% ↓).**
- 2. Restorative (G.H. ↑).**
- 3. Safety.**
- 4. Social bonding.**
- 5. To dream.**

# Normal Sleep

- **Normal sleep consists of 1-4 series of phases of increasing depth(NREM) and REM phases.**
- **Each phase has a characteristic EEG.**
- **There is a decrease with age in sleep length.**

# Non REM Sleep

## Consists of 4 stages

- Difficult of arousal in 3+4 stages.
- II stage = 45% of sleep.
- Stage II shows spindles and K complex.

# Non REM Sleep

- ◆ Dropping in heart rate.
- ◆ Slowing in respiration.
- ◆ Decreasing in  $t^{\circ}$ .
- ◆ Decreasing in BP.
- ◆ Night terror
- ◆ Growth hormone secretion

# REM Sleep

- **Rapid eye movements & penile erection loss of muscle tone.**
- **Increase in brain thermo-regulation.**
- **Ease of arousal.**
- **Occupies 30% of sleep in adults.**
- **Enuresis**

# Dreams

- REM sleep dreams : sexual, clear, sleep paralysis, connected to external stimuli easy to be recalled.
- Nightmares
- Non REM sleep dreams : No recall(Night terrors).



# Normal Sleep

## In the first cycle:

- \* 15-20 minutes to fall a sleep.**
- \* Over the next 45 min. one descends to stage 3 & 4**
- \* After 45 min. after stage 4 reaches the first REM stage.  
(REM latency =  $45 + 45 = 90$  min.)**

## **As the night progresses:**

- \* Each REM period gets longer.**
- \* And stage 3+4 gets shorter  
until they disappear.**
- \* Further into the night sleep  
becomes lighter and dreams  
become more.**

## Sleep and age:

- \* Nocturnal awakenings ↑
- \* Total sleep time ↓
- \* Time to fall a sleep ↑
- \* Dissatisfaction with sleep ↑
- \* Need for daytime naps ↑
- \* REM sleep ↓

## **Sleep Hygiene:**

- \* Low light.**
- \* No noise.**
- \* Comfortable bed.**
- \* No caffeine before sleep.**
- \* No large meal before sleep.**

## **Sleep Hygiene:**

- \* Bed only for sleep.**
- \* Go to bed when sleepy.**
- \* Get up if awake after 10 min.**
- \* Regular bedtimes and rising times.**

## **Classification of sleep disorders:**

- \* Dyssomnias.**
- \* Parasomnias.**
- \* Others.**

# Dyssomnias

- **Insomnia.**
- **Hypersomnia.**
- **Narcolepsy.**
- **Sleep apnea.**
- **Circadian rhythm sleep disorder.**

- **Sleep drunkenness.**
- **Kleine-Levin syndrome.**
- **Restless legs syndrome.**
- **Nocturnal myoclonus.**
- **Menstrual-associated Syndrome.**



# Parasomnias

- **Nightmare disorders.**
- **Sleep terror disorders.**
- **Sleep walking disorders.**
- **Bruxism.**

- **Sleep talking.**
- **Head banging.**
- **Familial sleep paralysis.**
- **REM sleep behavior syndrome.**

# Others

- **Sleep related epilepsy.**
- **Sleep related headache.**
- **Sleep related cardiovascular syndrome.**
- **Sleep related gastrooesophageal reflux.**
- **Sleep related hemolysis.**
- **Sleep related swallowing syndrome.**

# Insomnia

- Is a disorder in which there is insufficient quantity or quality of sleep.
- Transient or chronic.
- 15-40% of adults C/O insomnia.
- 14% of children C/O insomnia.

# Aetiology

- **Environmental.**
- **Physiological.**
- **Life stress.**
- **Psychiatric.**
- **Physical.**
- **Pharmacological.**
- **Parasomnias.**

# Management

- **Sleep hygiene.**
- **Hypnotics (benzodiazepines, zolpidem).short-acting**
- **Behavioural approaches (Relaxation).**

# Narcolepsy

**Characterized by the following symptoms:**

- 1. Excessive daytime sleep (attacks-15 min.)**
- 2. Cataplexy (muscle weakness or paralysis in attacks)**
- 3. Sleep paralysis < 1 min. conscious**
- 4. Hypnagogic hallucinations .**
- 5. REM sleep onset after 10 min. > 70%**

## **Onset & clinical course:**

- \* Onset before 15 years of age.**
- \* Course is chronic without major remission.**



## **Treatment:**

- \* Daytime naps.**
- \* Safety considerations.**
- \* C.N.S. Stimulants (+).**
- \* Propranolol (+ -).**
- \* MAOIs or MARIs (+ -).**

# **Sleep Apnea:**

- \* Characterized by sleep disruption leading to excessive sleepiness or insomnia that is due to breathing disturbance.**
- \* Three types : obstructive , central and mixed .**

- **Hypertension +**
- **Arrhythmias +**
- **Right sided HF +**
- **In severe cases 500 apneas/night for 10-20 sec. each.**
- **Treatment – refer to chest specialist.**

# Kleine-Levin Syndrome

- **Periodic hypersomnia – normal sleep in between.**
- **Young men (sleep for several weeks).**
- **Hypersexuality + hostility + amnesia.**
- **Rx = Ritalin or lithium.**

# REM sleep behavior syndrome

- **Loss of atonia during REM sleep with appearance of complex and violent behaviors (potential for injury).**
- **Chronic & progressive mainly in old men.**
- **Neurological cause (+ -).**
- **Rx.: Tegretol (300 mg) daily or Clonazepam (0.5 – 2) mg. a day.**

*Thanks*