IMPORTANCE OF SLEEP

40TH ANNUAL JUDGES AND ATTORNEYS SUBSTANCE ABUSE AND ETHICS SEMINAR

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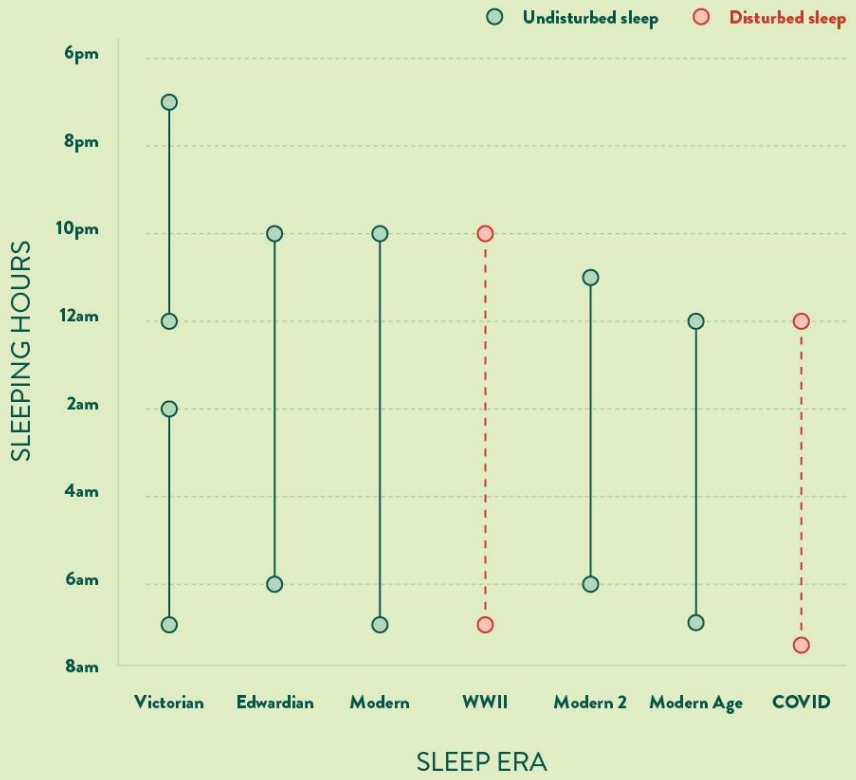
SLEEP AND ANXIETY TREATMENT AND RESEARCH DIVISION

Objectives

- Improve understanding of benefits of sufficient sleep and consequences of insufficient sleep
- Identify 4 separate sleep problems
- Provide options for practical daily practices to optimize sleep for those in high intensity work environments

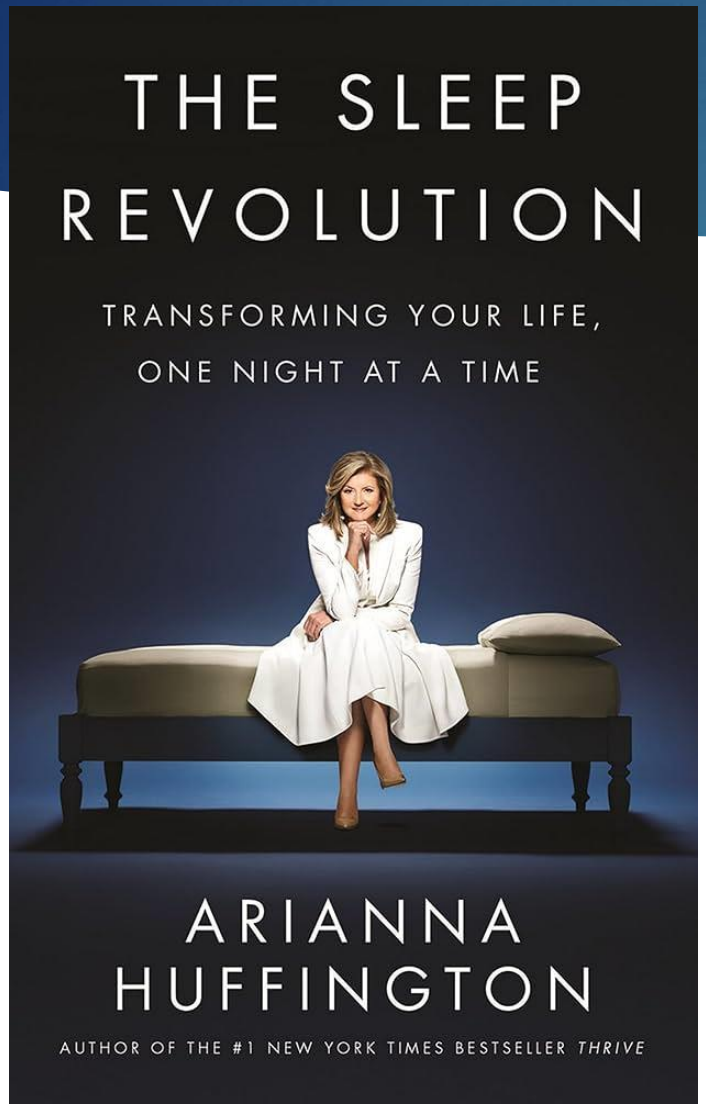
A HISTORY OF SLEEP

Sleeping hours throughout history



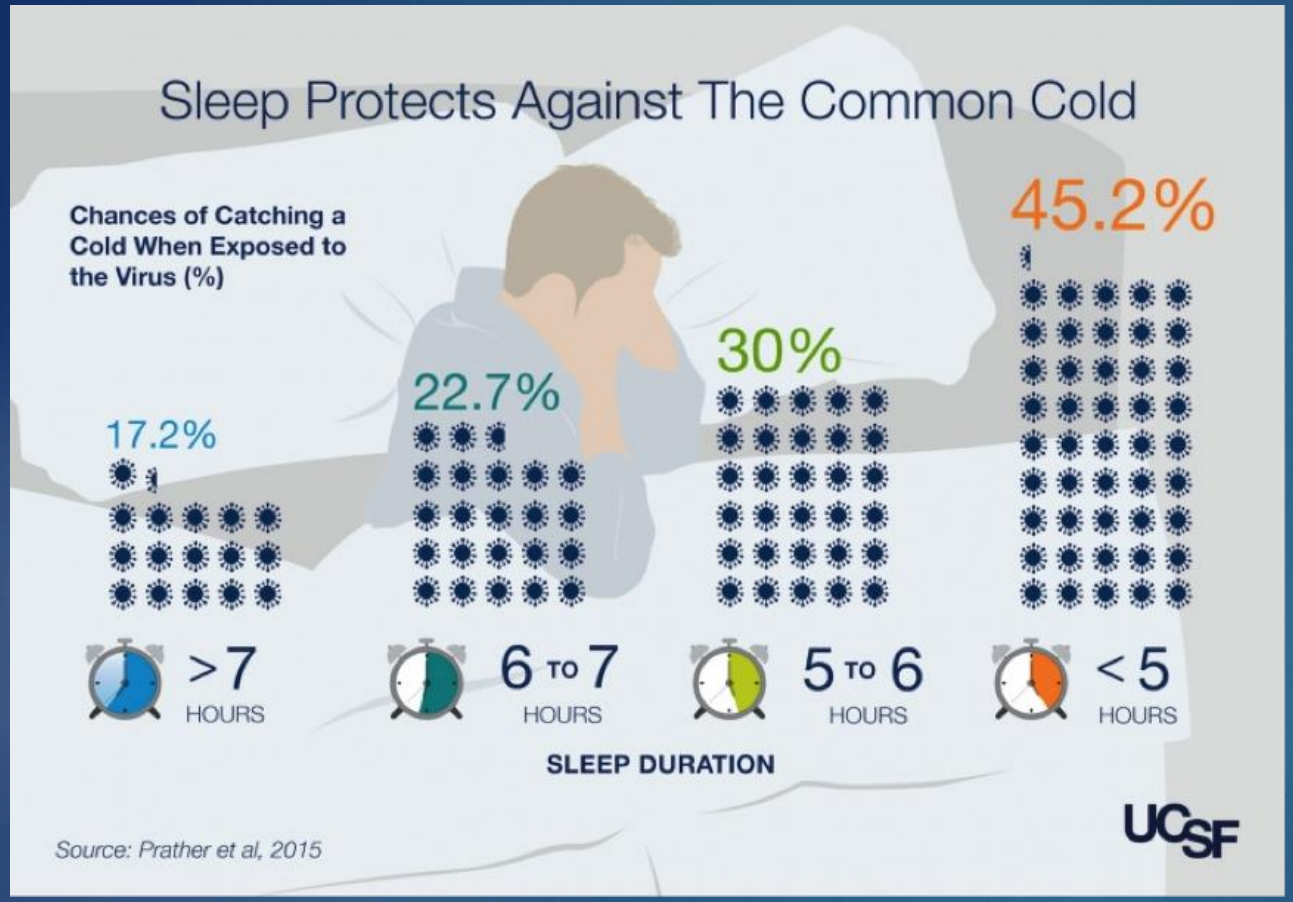
For the full report visit
hollandandbarrett.com/shop/health-wellness/sleep-relaxation/history-of-sleep

Holland&Barrett


THE SLEEP REVOLUTION
TRANSFORMING YOUR LIFE, ONE NIGHT AT A TIME
ARIANNA HUFFINGTON
AUTHOR OF THE #1 NEW YORK TIMES BESTSELLER THRIVE

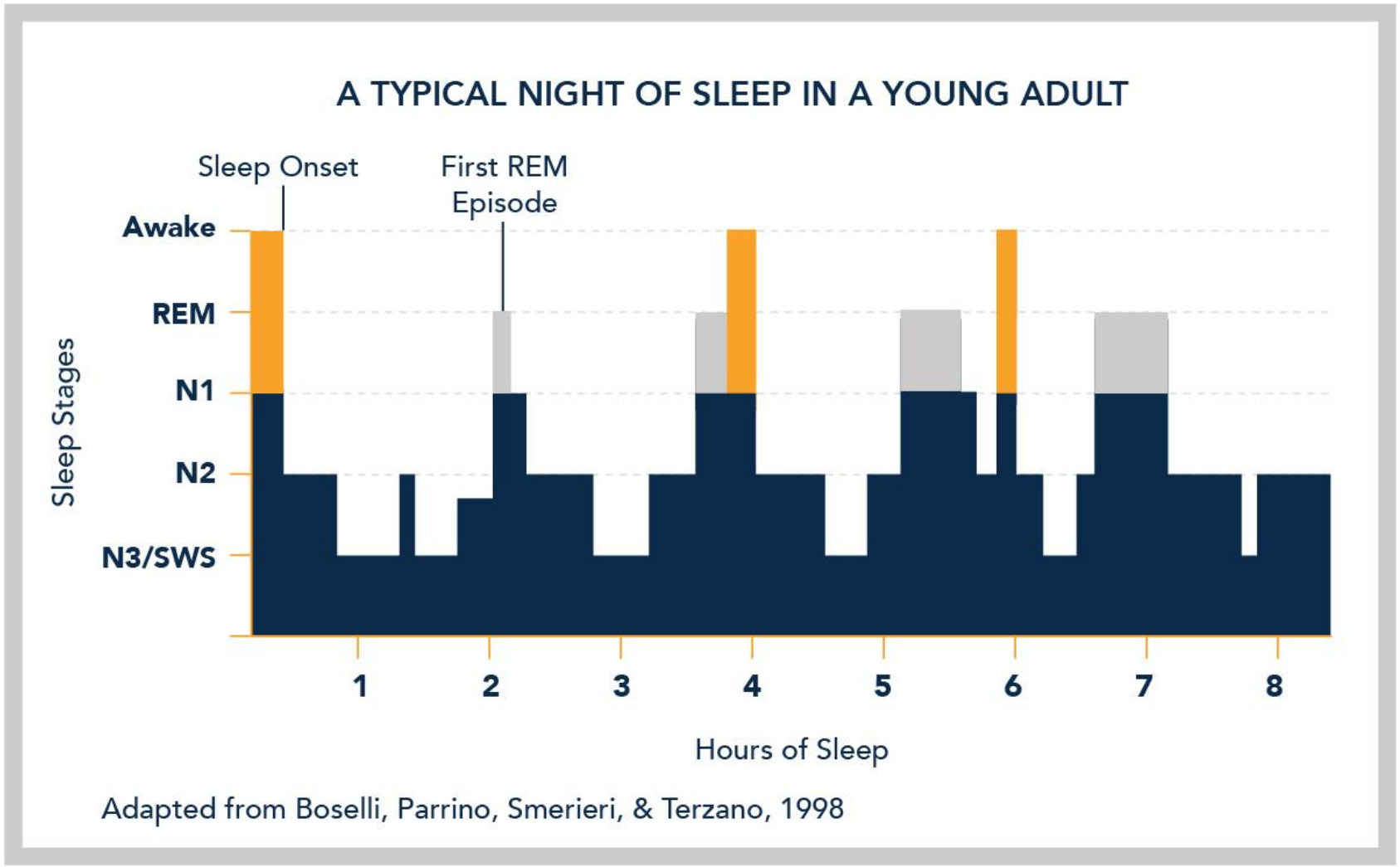

U.S.ARMY
P3
PerformanceTriad

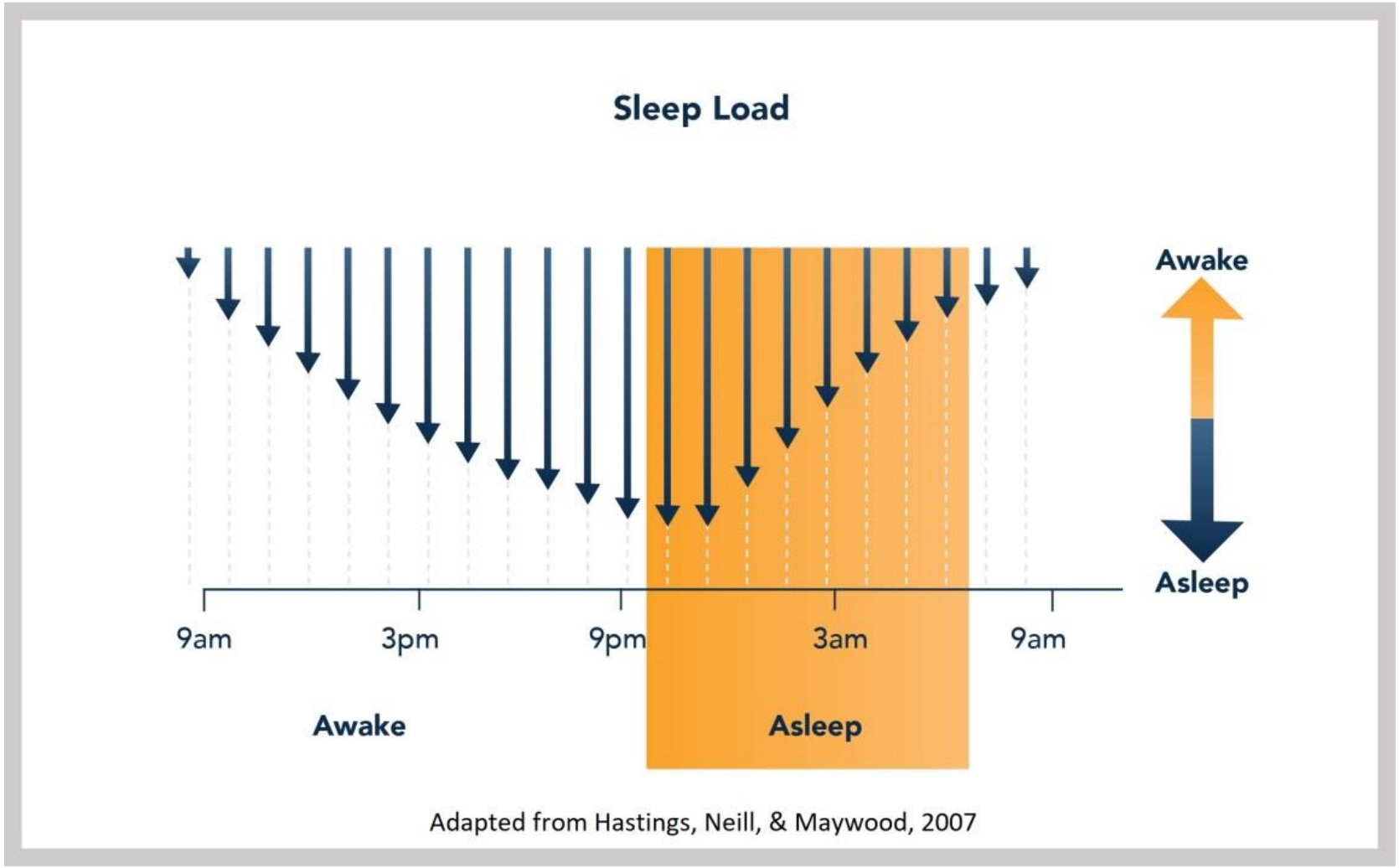

The Performance Triad
challenges you to enhance your health!
Sleep, Activity, and Nutrition (SAN)
are vital components of healthy living.

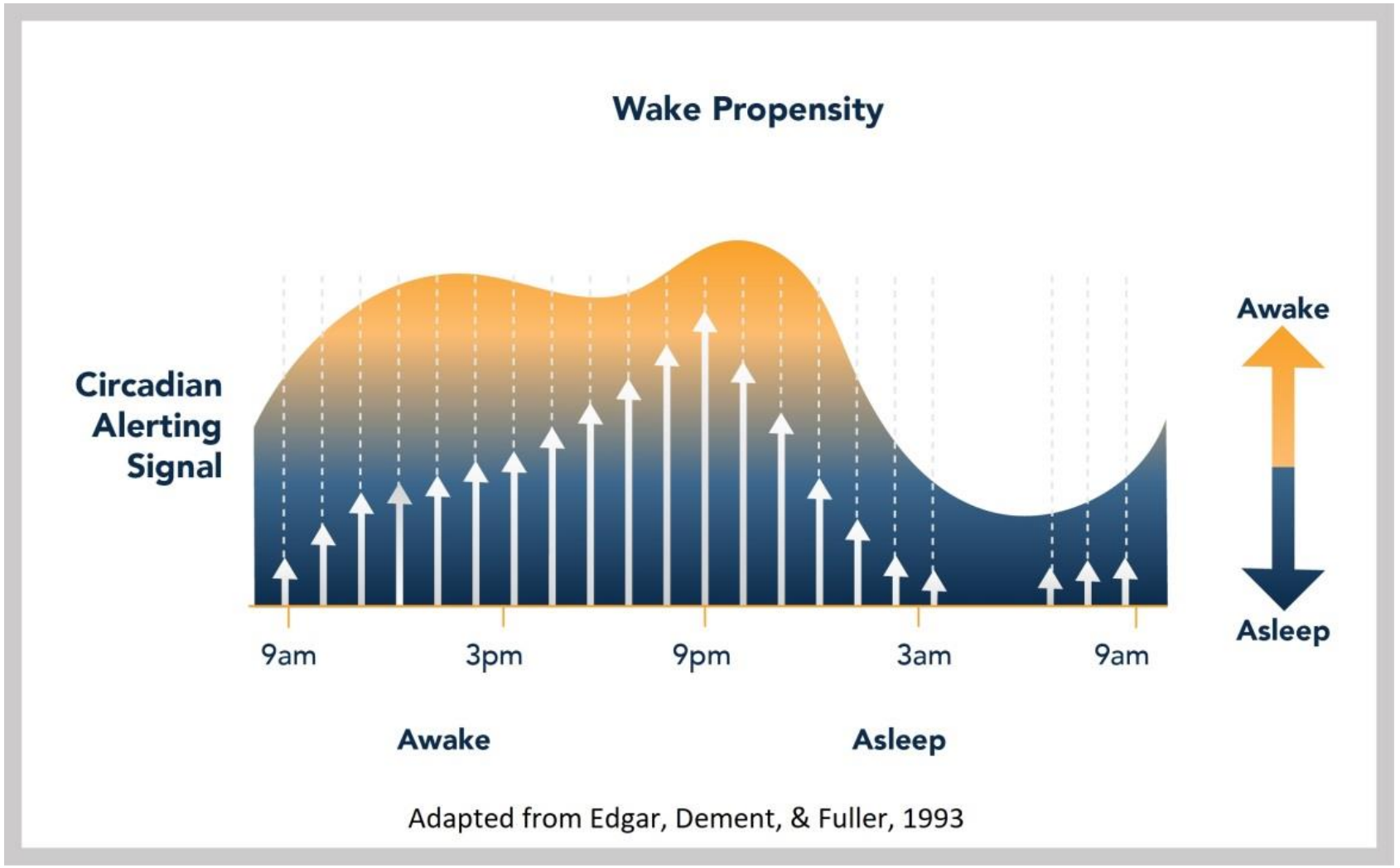


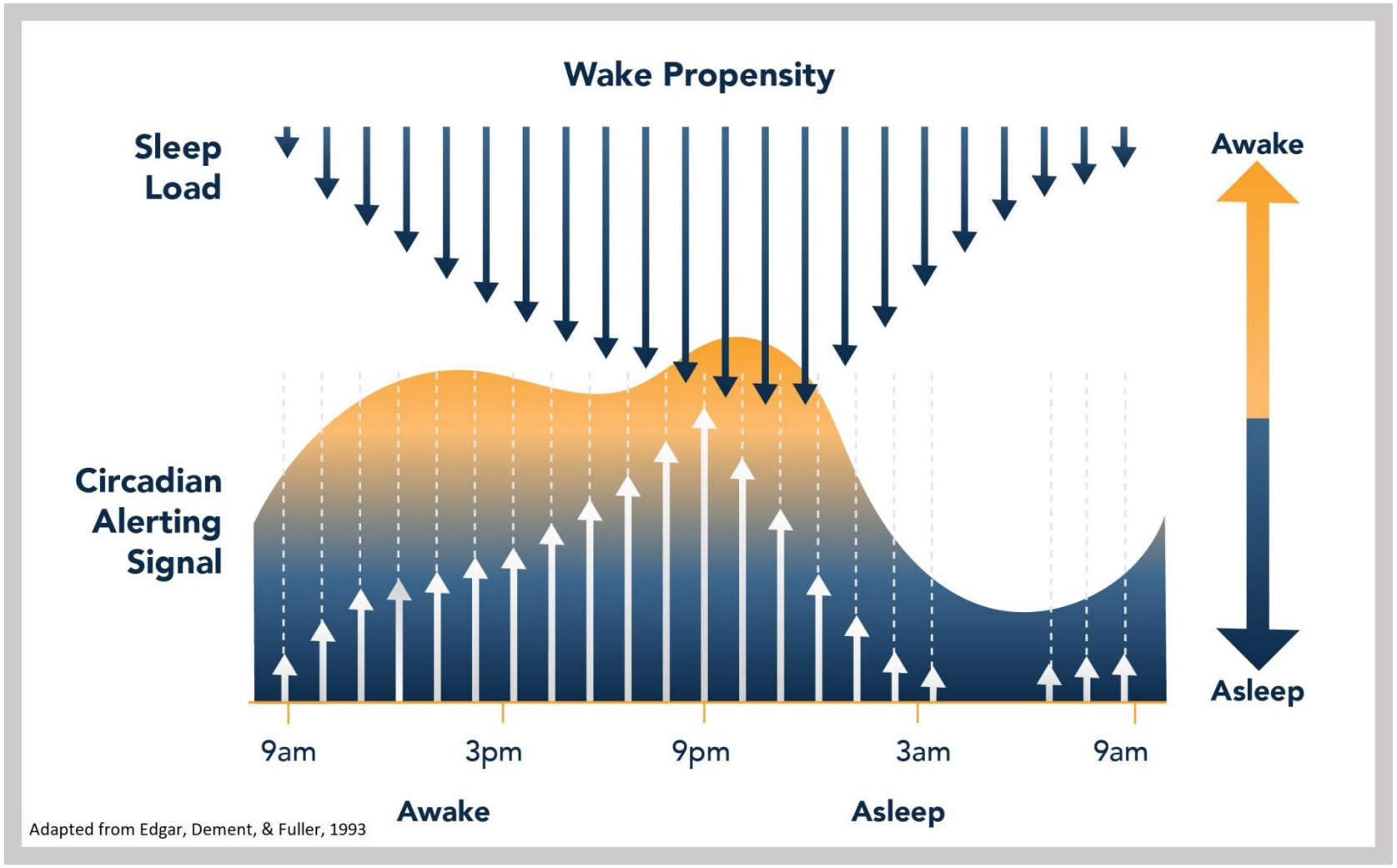
Benefits of sleep

Benefits of sleep


A TYPICAL NIGHT OF SLEEP IN A YOUNG ADULT
Sleep Onset
First REM Episode
Awake
REM
N1
N2
N3/SWS
Sleep Stages
1
2
3
4
5
6
7
8
Hours of Sleep
Adapted from Boselli, Parrino, Smerieri, & Terzano, 1998


Sleep Load
Awake
Asleep
9am
3pm
9pm
3am
9am
Awake
Asleep
Adapted from Hastings, Neill, & Maywood, 2007


Wake Propensity
Circadian Alerting Signal
Awake
Asleep
9am
3pm
9pm
3am
9am
Awake
Asleep
Adapted from Edgar, Dement, & Fuller, 1993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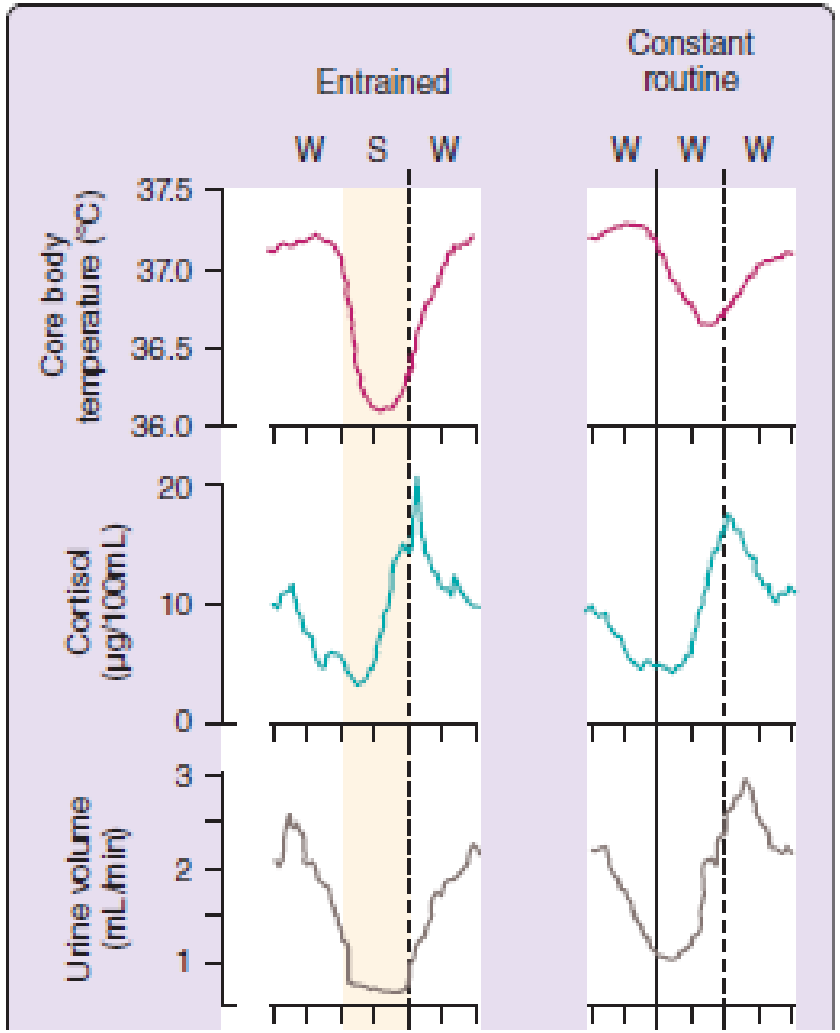
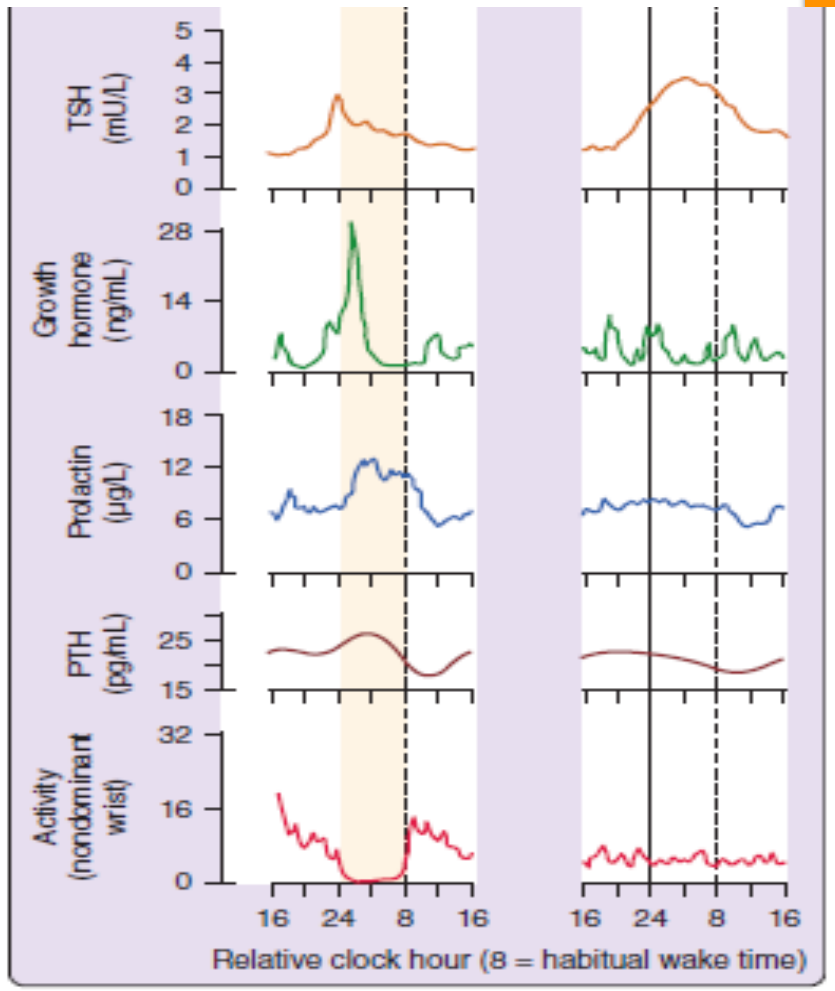
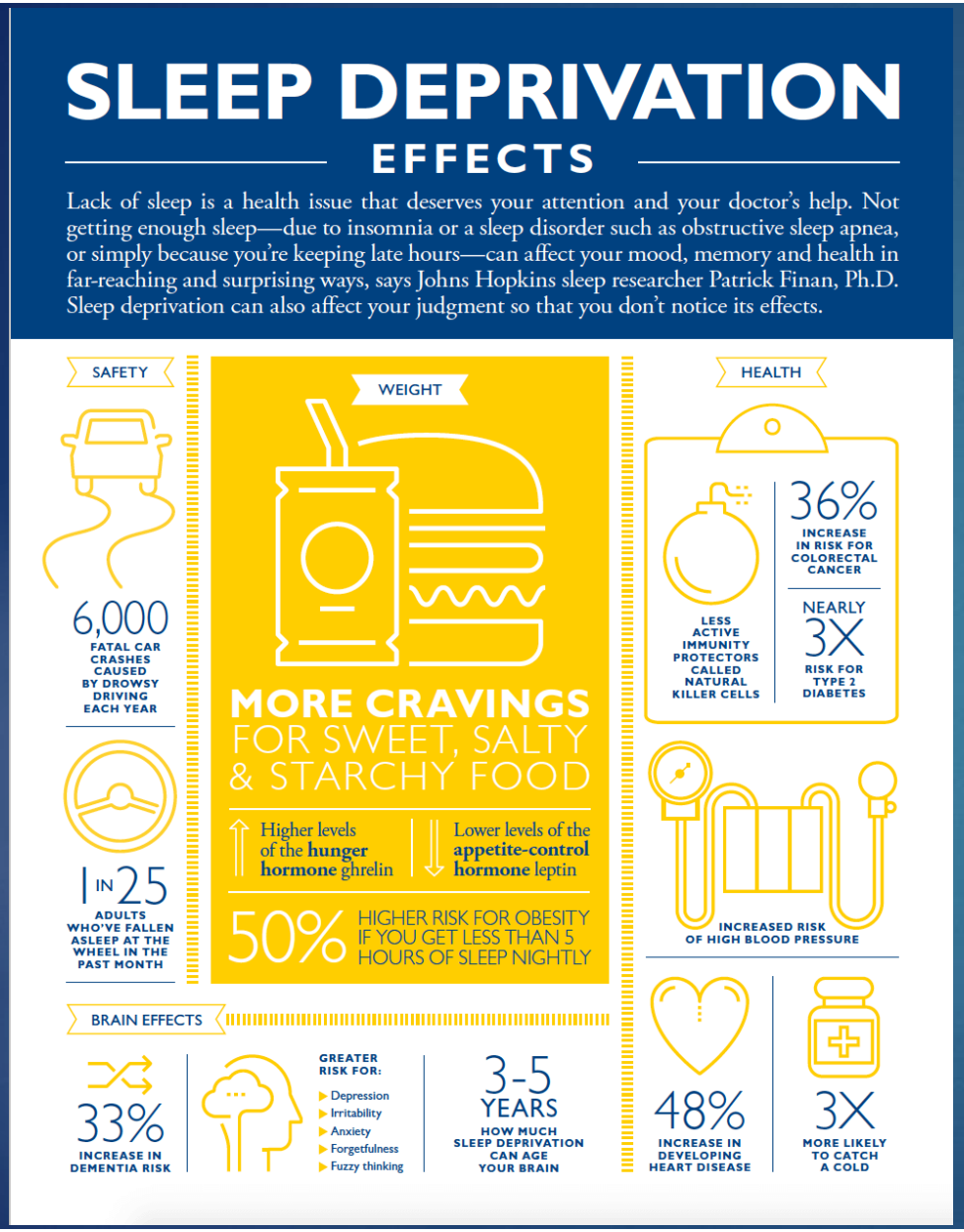
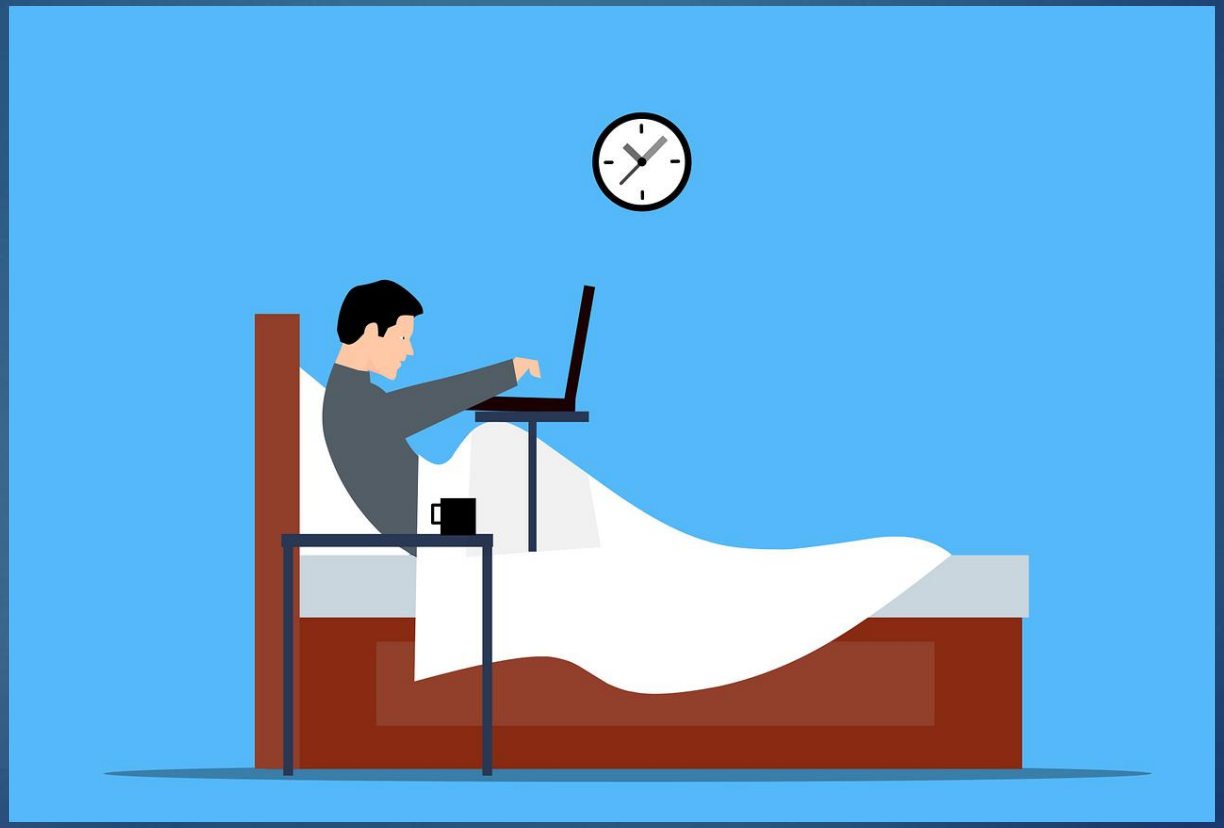

Entrained
Constant routine
W S W
W W W
Core body temperature (°C)
37.5
37.0
36.5
36.0
Cortisol (µg/100mL)
20
10
0
Urine volume (mL/min)
3
2
1


TSH (mU/L)
5
4
3
2
1
0
Growth hormone (ng/mL)
28
14
0
Prolactin (µg/L)
18
12
6
0
PTH (pg/mL)
25
15
Activity (nondominant wrist)
32
16
0
16 24 8 16
16 24 8 16
Relative clock hour (8 = habitual wake time)



Consequences of lack of healthy sleep

4 Common sleep problems
(.. And what to do about them)



First Things First: Quantity AND Quality

1) Situational Sleep Deprivation

4 Common sleep problems (.. And what to do about them)

- The problem: Sleep deprivation
  - How much sleep is needed?
  - What are signs of sleep deprivation?
- Potential solutions:
  - Allowing longer sleep window
  - Strategic napping

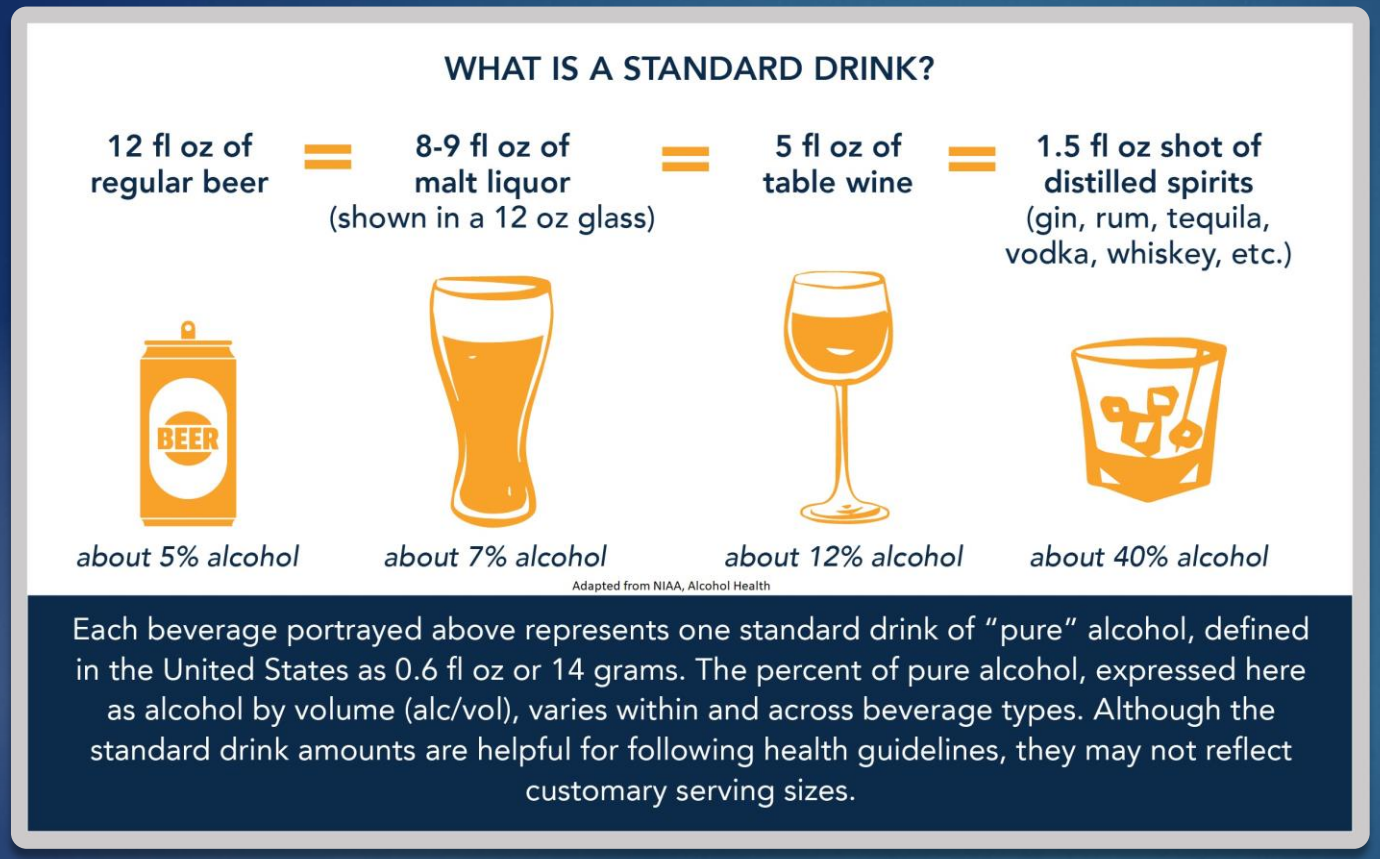
1) Situational Sleep Deprivation

2) Chronic Insomnia

4 Common sleep problems (.. And what to do about them)

- The problem: Insomnia
  - Difficulty falling and/or staying asleep
- Potential solutions:
  - Cognitive behavioral therapy for insomnia
  - Relaxation
  - Medications

Alcohol and insomnia



1) Situational Sleep Deprivation

2) Chronic Insomnia

3) Circadian Misalignment

4 Common sleep problems (.. And what to do about them)

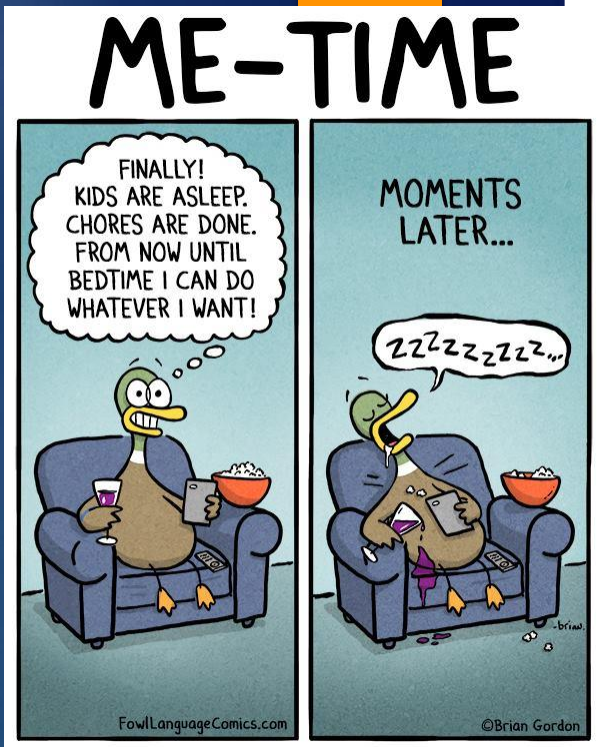
- The problem: Circadian misalignment
  - Night owls
  - Morning larks
- Potential solutions:
  - Adjusting work schedule where possible
  - Timing melatonin and bright light to adjust circadian rhythm

1) Situational Sleep Deprivation

2) Chronic Insomnia

3) Circadian Misalignment

4) Sleep apnea

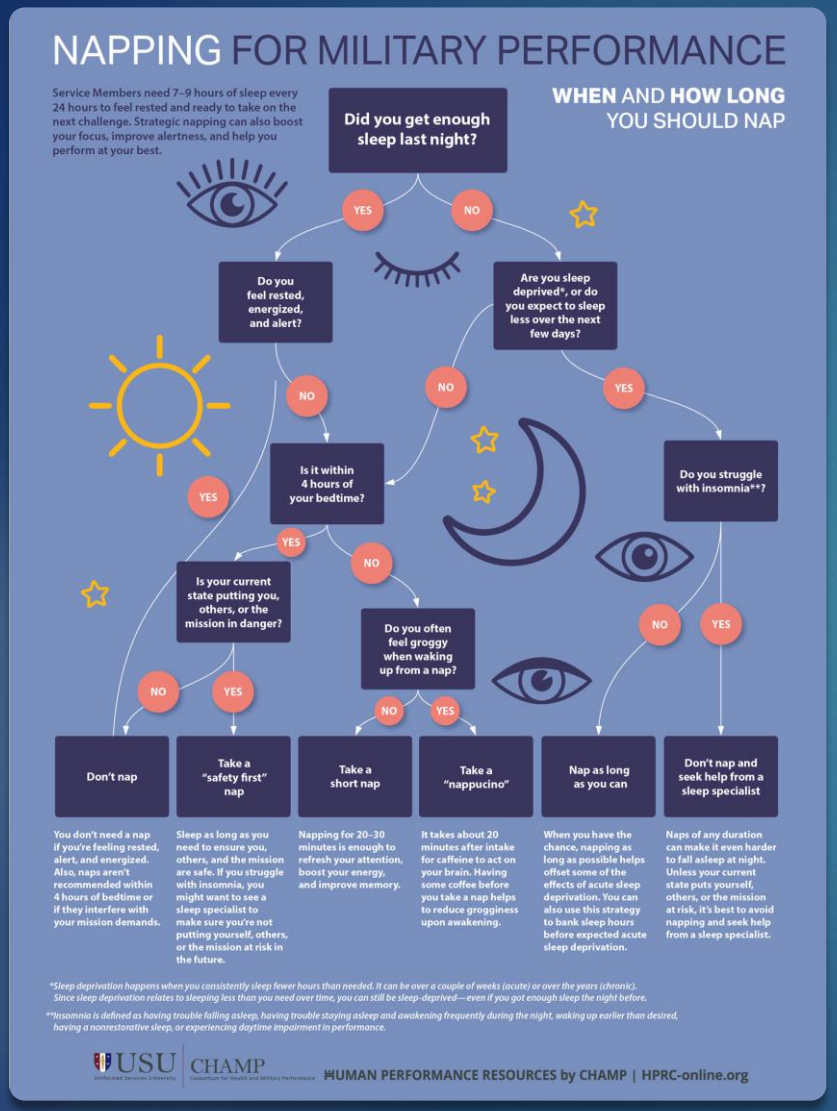


4 Common sleep problems (.. And what to do about them)

- The problem: Sleep apnea
  - Lack of ability to breathe freely during sleep resulting in shallow, non-restorative sleep
  - Often results in non-refreshing sleep and sleepiness during the day
  - Requires sleep study
- Potential solutions:
  - CPAP/BiPap
  - Mandibular device
  - Upper airway stimulator

Questions?

- All slides below this are for use in response to FAQs I get and try to be ready for



To nap or not to nap

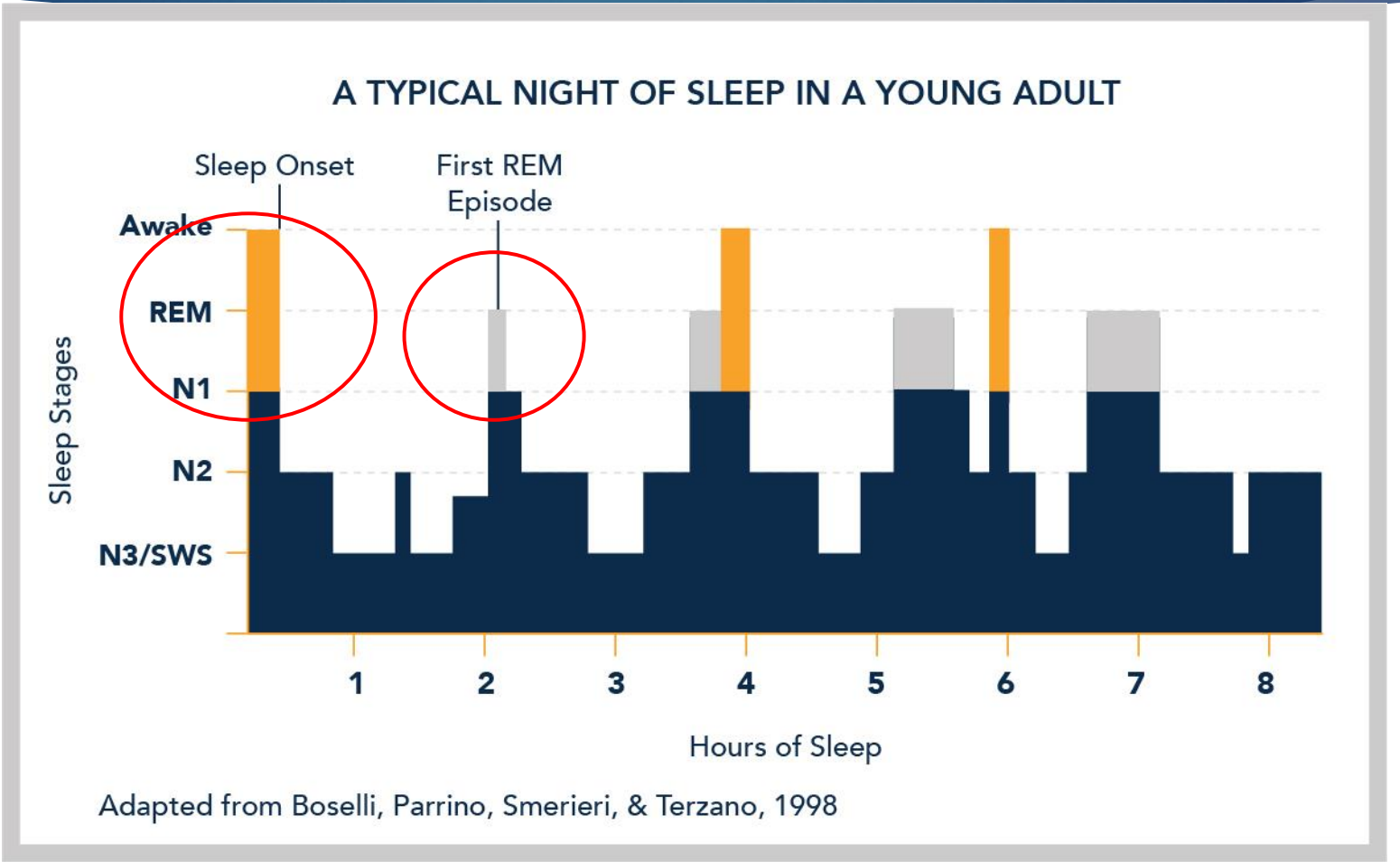
Insomnia

- DSM-5 Definition
  - Difficulty falling or staying asleep
    - >30 minutes
  - At least 3 night/week
  - At least 3 months
  - Sleep-related daytime dysfunction
- Comorbidities

Prevalence of Insomnia

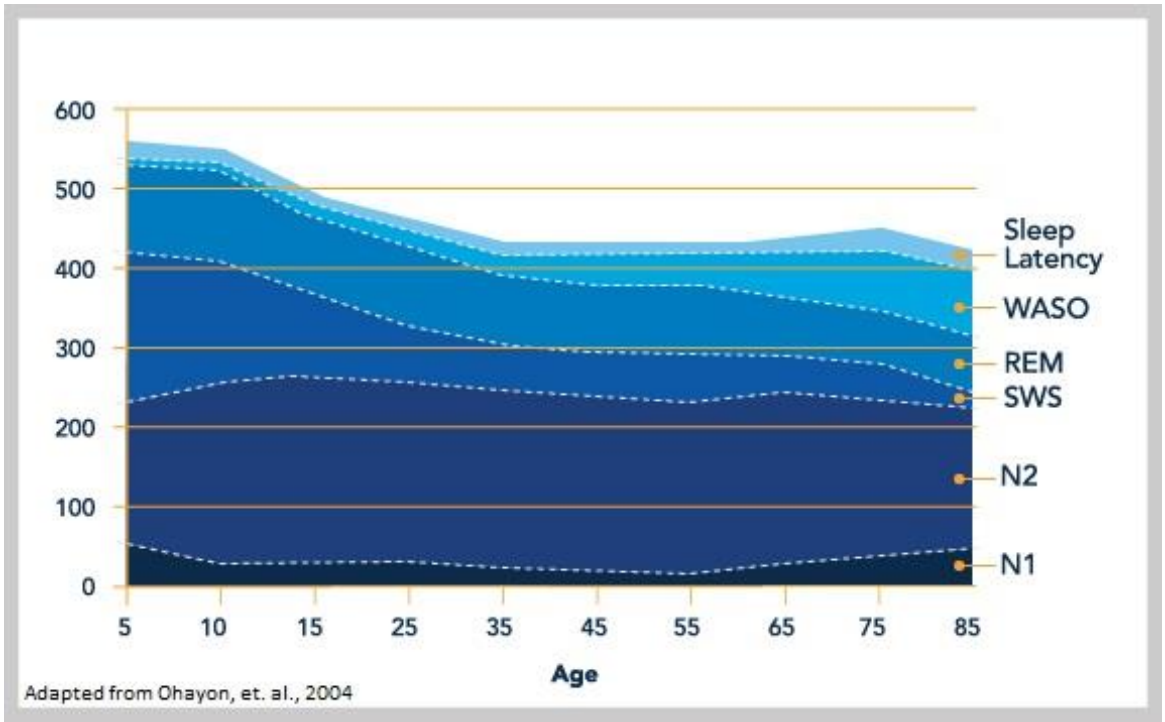
- Prevalence in Civilian populations is 9-15% (Ohayon, 2002; Licstein et al., 2003)
- Prevalence insomnia in the military ranges from 8%-63% (Taylor, Pruiksma, Hale, Kelly, Maurer, Peterson, et al., in press)
- Varies so much due to assessment and location variability
- Our research shows approximately 20%

Across the Night

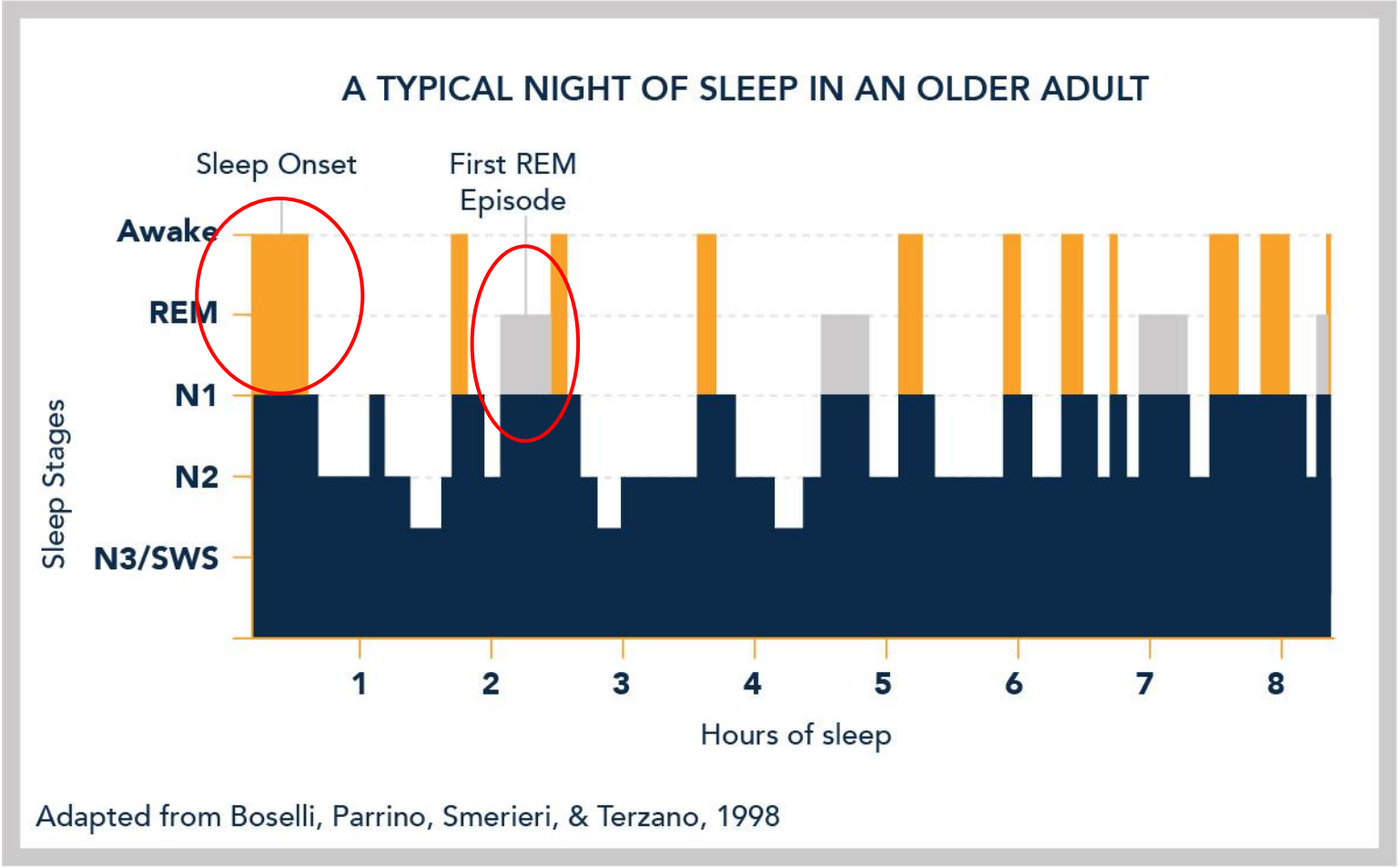


Aging

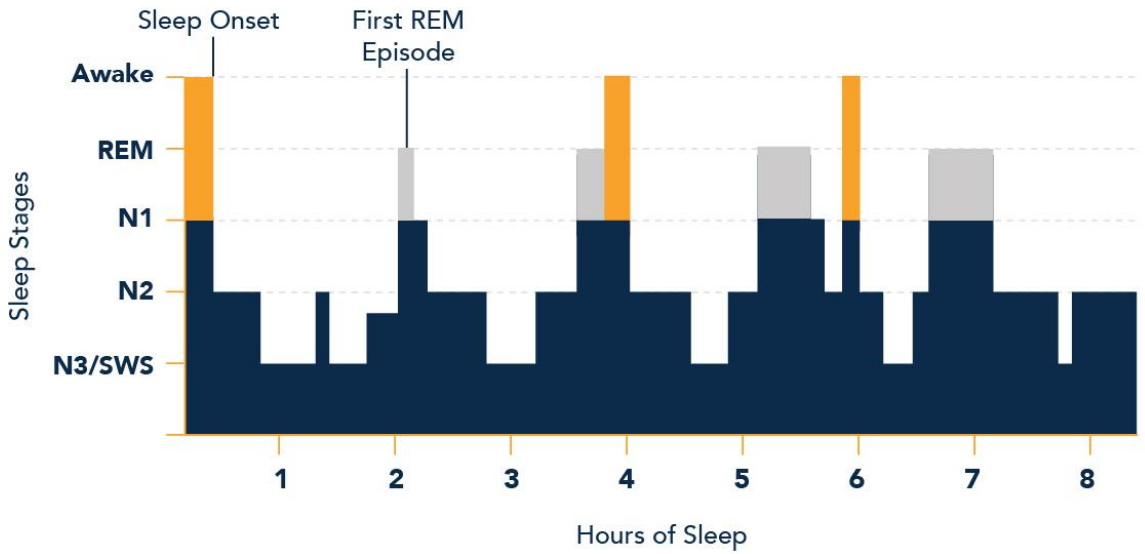
- Sleep need changes as we age
  - Average sleep duration tends to decrease from adolescence until 40
  - Plateaus until after 75
- Sleep mix also changes
  - Decreases in N3 (SWS)
  - Increases in wakefulness
    - Longer SOL
    - Greater WASO



Across the Night

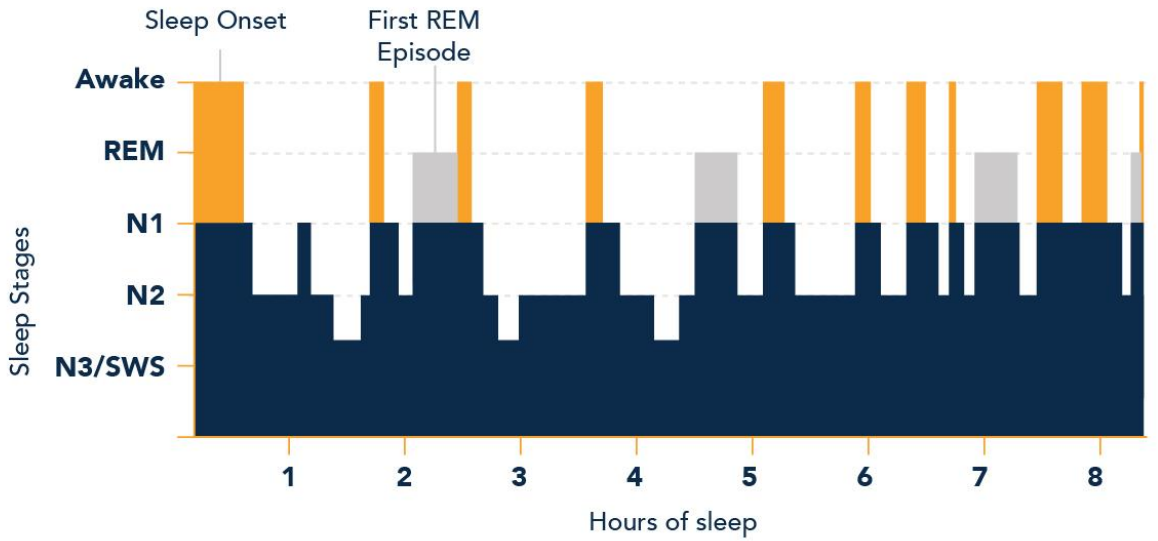


A TYPICAL NIGHT OF SLEEP IN A YOUNG ADULT



Adapted from Boselli, Parrino, Smerieri, & Terzano, 1998

A TYPICAL NIGHT OF SLEEP IN AN OLDER ADULT



Adapted from Boselli, Parrino, Smerieri, & Terzano, 1998

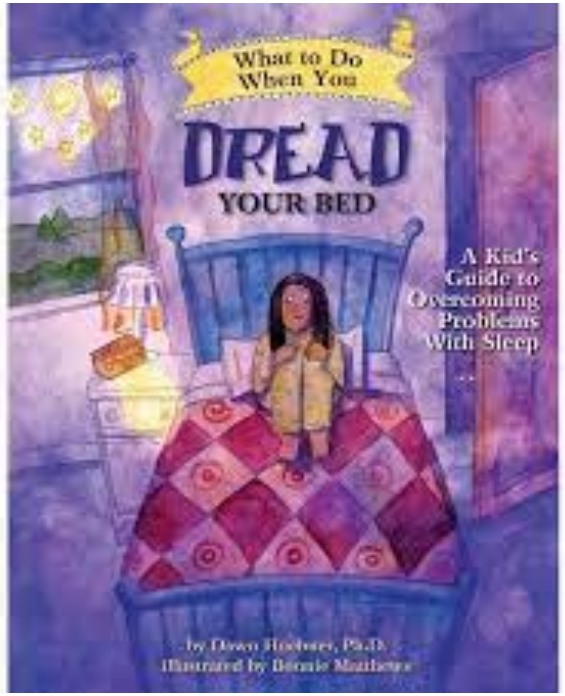
Stimulus Control

- Bed only for sleep and sex
- No bed until sleepy
  - Tired vs. sleepy
- 15 minute rule
- No napping


unplug
Calm
AURA

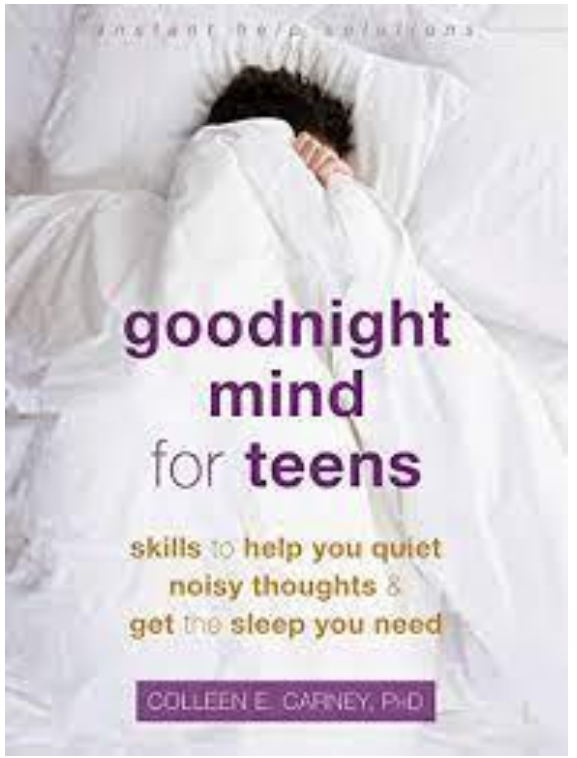
Pediatric Insomnia

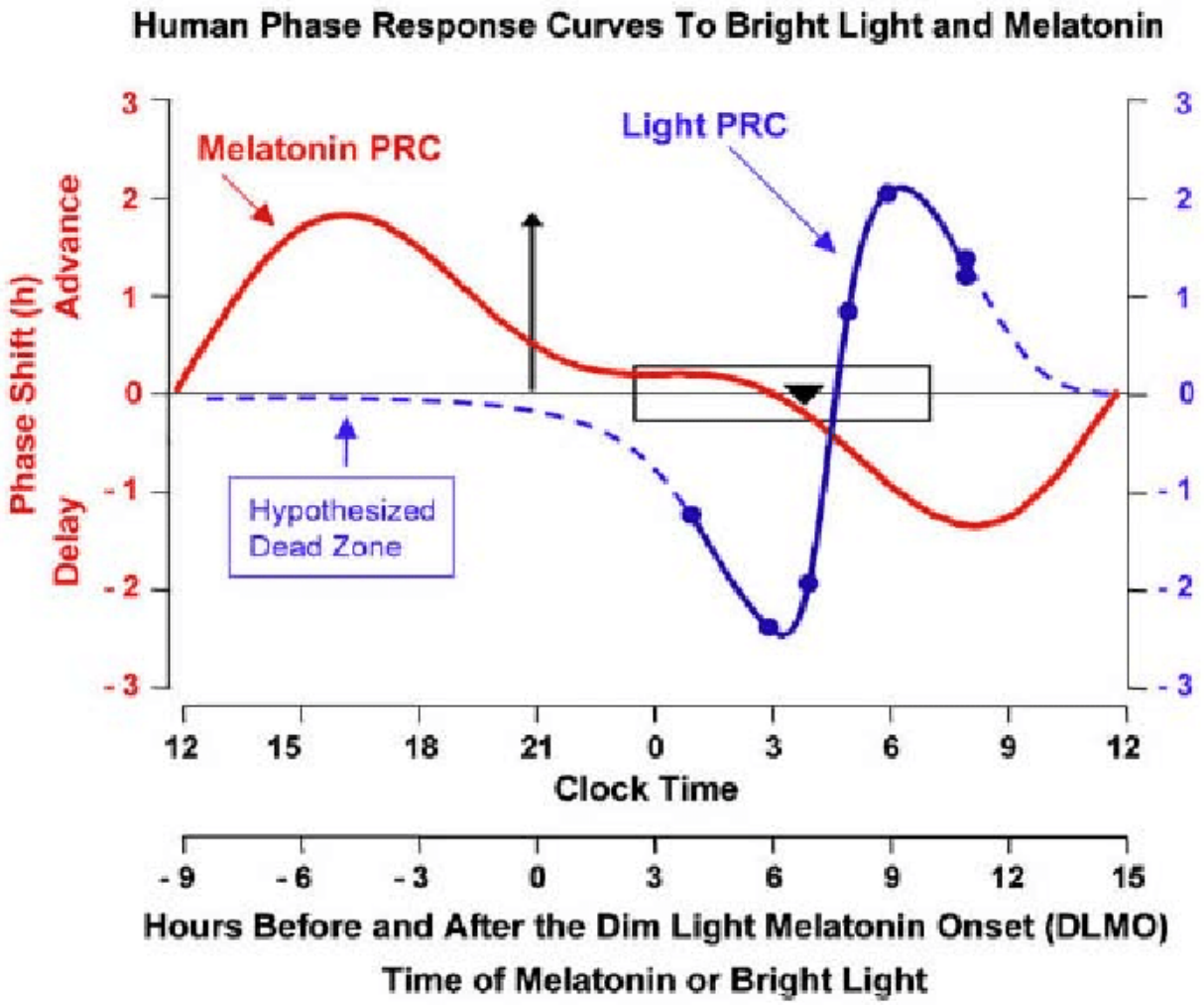
- Behavioral Insomnia of Childhood
  - Sleep onset type
    - Excuse-me drill
  - Limit setting type
    - Excuse-me drill, Bedtime pass
  - Combined-type
- Other Considerations
  - Nightmares
  - Parasomnias
  - Sleep Apnea



Adolescent Insomnia

- Can benefit from CBTI
- Other considerations
  - Circadian delay
  - Nightmares
  - Sleep apnea




Human Phase Response Curves To Bright Light and Melatonin
Melatonin PRC
Light PRC
Phase Shift (h)
Advance
Delay
3
2
1
0
-1
-2
-3
Hypothesized
Dead Zone
12
15
18
21
0
3
6
9
12
Clock Time
-9
-6
-3
0
3
6
9
12
15
Hours Before and After the Dim Light Melatonin Onset (DLMO)
Time of Melatonin or Bright Light

A few notes on medications

- Most common for insomnia
  - Z drugs (e.g., Ambien, Sonata, etc.)
  - Benzodiazepines
  - Newer – Orexin Receptor Antagonists (e.g., Belsomra)
- For nightmares
  - Prazosin
- Other things you may run into
  - SSRIs/SNRIs – Suppresses REM, increases fragmentation
  - DNRI (Wellbutrin) – Difficulty falling asleep (particularly in women)
  - Varenicline (Chantix) – Atypical dreams