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Beyond sleep hygiene: best practices for sleep health

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Objectives

- Describe sleep needs for adults
- Review best practices for healthy sleep
  - Basic sleep hygiene
  - Wind down and relaxation
  - Stimulus control
- Identify techniques to manage fatigue and shift work

Off-label use and disclosures

- Melatonin is not FDA approved for any indication
- AASM conducts yearly surveys on over 2,000 US adults asking about various sleep issues, we will be reviewing some of the questions from 2023 and 2024 surveys

Sleep needs for adults

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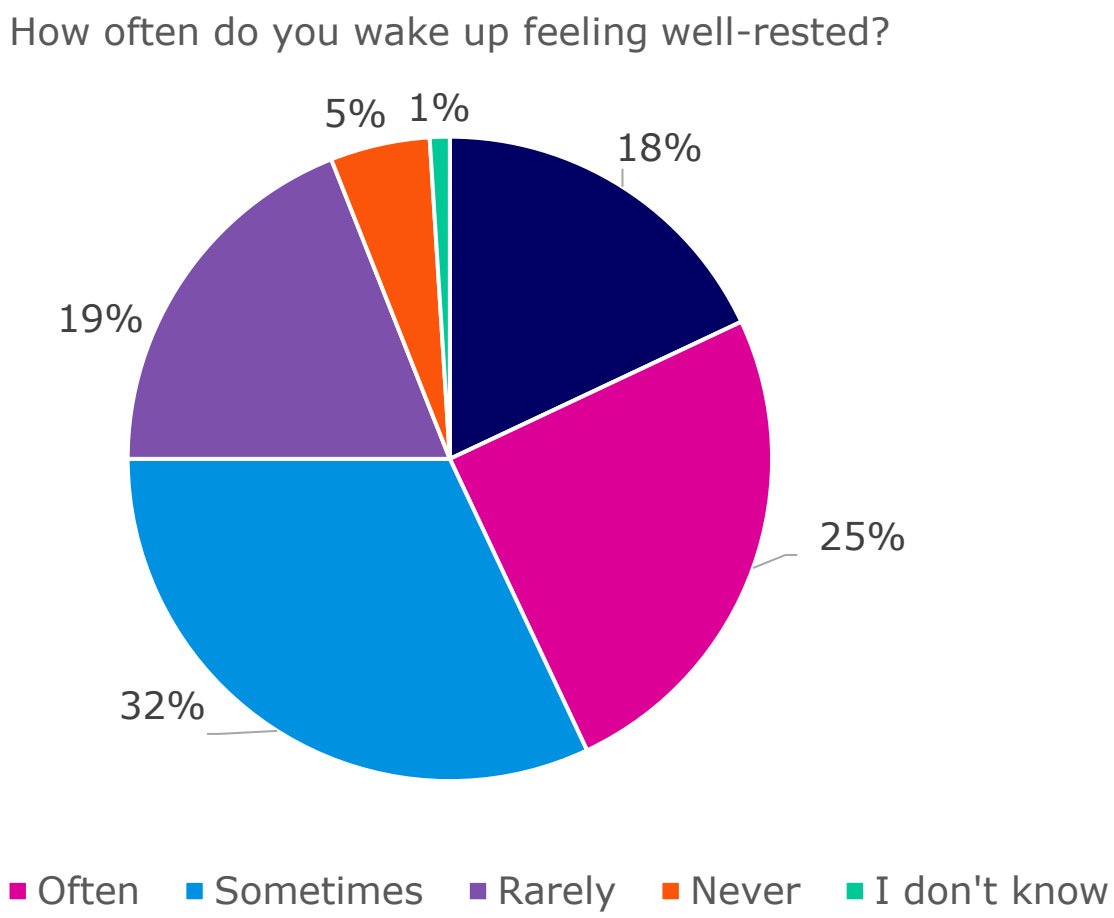
Who wakes up feeling rested?



31% of women rarely or never wake up rested

17% of men rarely or never wake up rested

So why do people wake up not feeling rested?

Pillars of healthy sleep

SUFFICIENT DURATION

AT THE RIGHT TIME

GOOD QUALITY

Pillars of healthy sleep

SUFFICIENT DURATION

AT THE RIGHT TIME

GOOD QUALITY

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What is the least amount of sleep that most of us need a night?

a. 6 hours a night

b. 7 hours a night

c. 8 hours a night

d. Sleep is not that important

What is the least amount of sleep that most of us need a night?

~~a. 6 hours a night~~

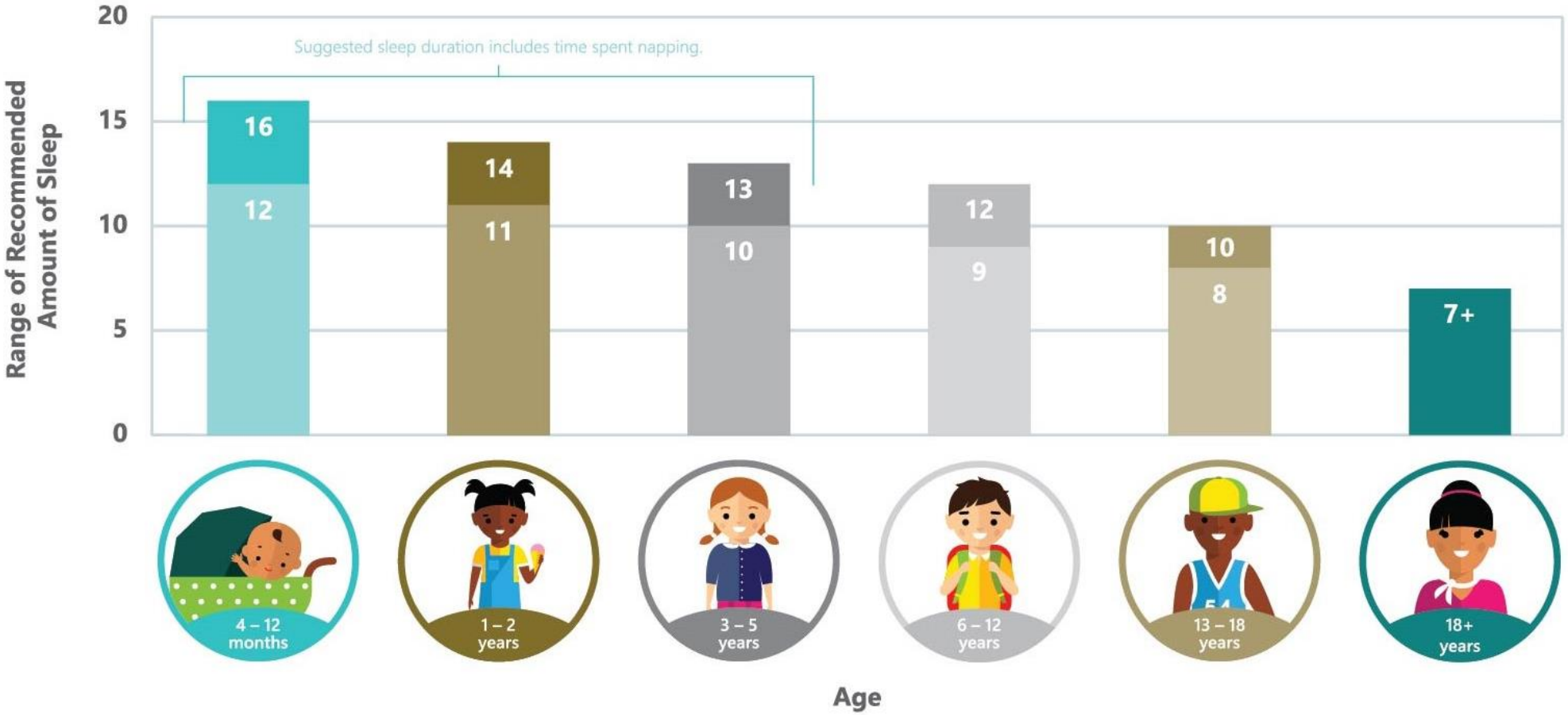
b. 7 hours a night

~~c. 8 hours a night~~

~~d. Sleep is not that important~~

Healthy Sleep Duration

The American Academy of Sleep Medicine recommends that you get the following hours of sleep on a regular basis for optimal health at each stage of life.



So why do people wake up not feeling rested?

- 7-9 hours of sleep per night on a regular basis is recommended for adults
- Most common cause of excessive sleepiness is insufficient sleep duration
  - Work and family responsibilities, socializing, social media, TV, sports…
  - Prioritize sleep

Pillars of healthy sleep

SUFFICIENT DURATION

AT THE RIGHT TIME

GOOD QUALITY

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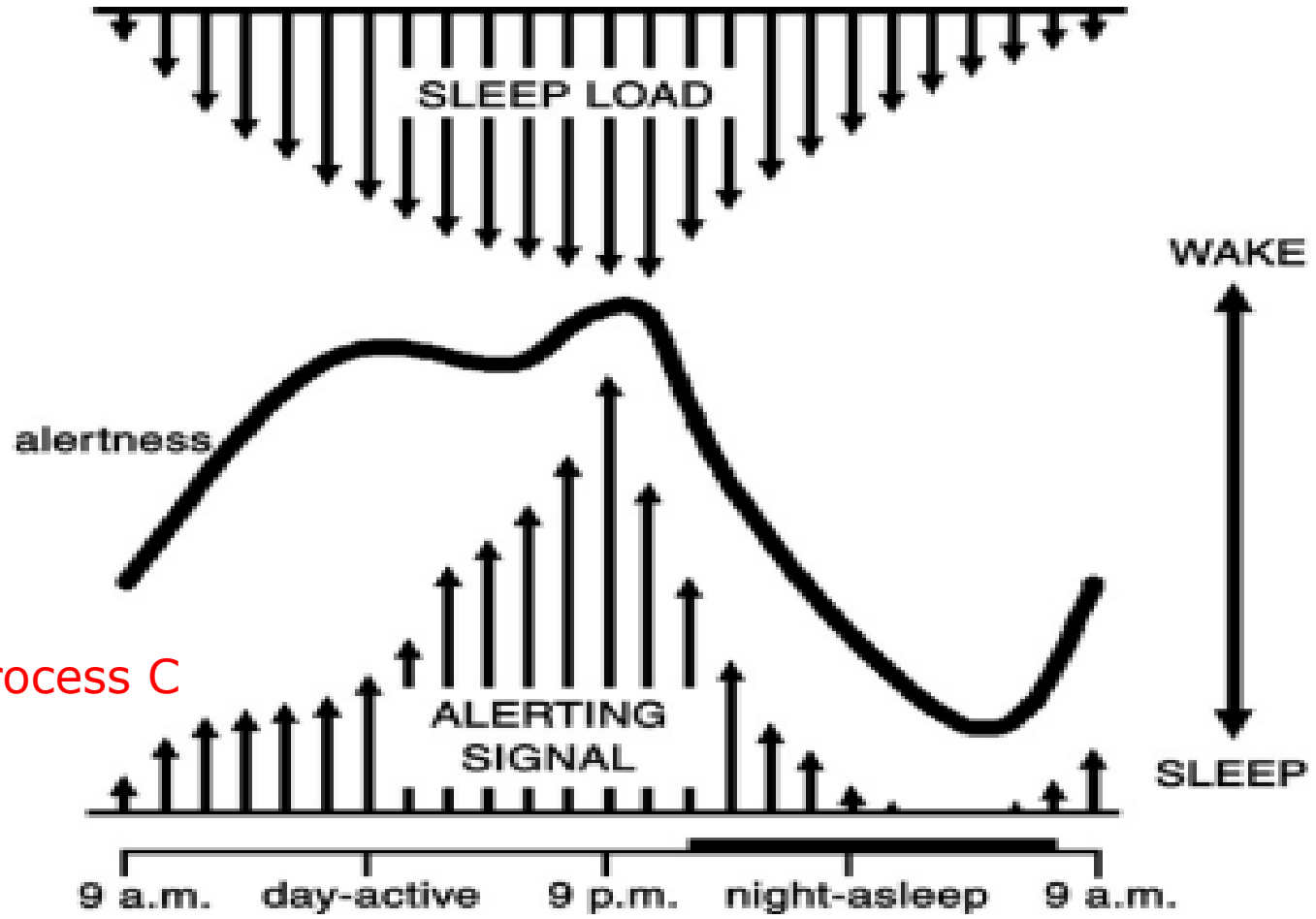
Two Process Model

Homeostatic process, Process S

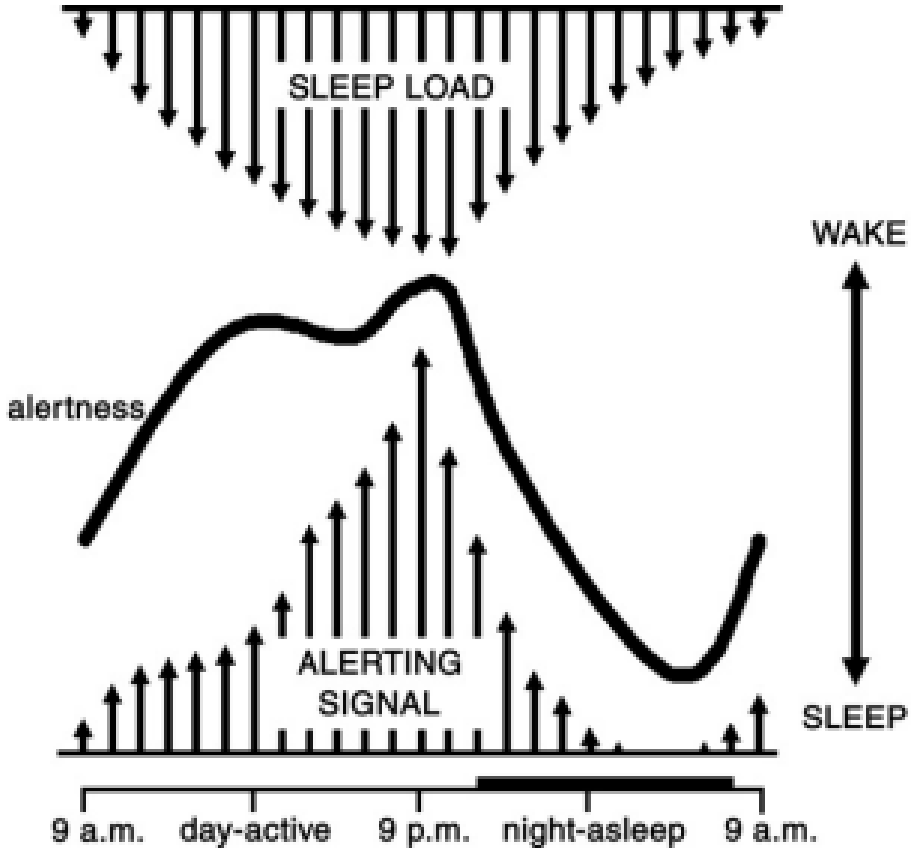
Circadian process, Process C



Beersma 2007

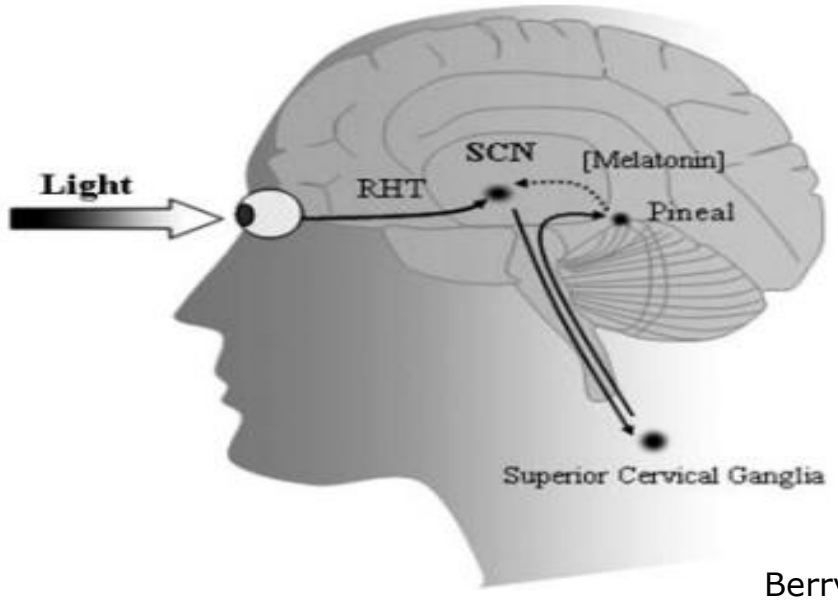
Homeostatic process: Process S

- Sleep load builds during wakefulness, falls during sleep
- There are several sleep-promoting neurochemical agents, including adenosine, prostaglandin D2, Growth Hormone-Releasing Hormone



Circadian process: Process C

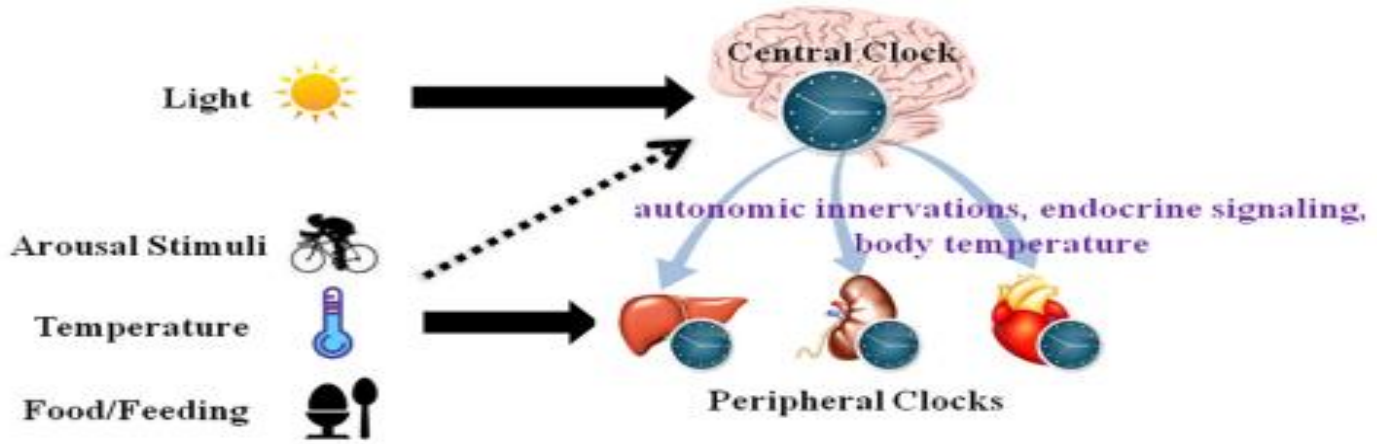
- Suprachiasmatic Nucleus (SCN) in the anterior thalamus is the major circadian pacemaker of the body
- SCN controls the rhythms of sleep-wake propensity, core body temperature, and secretion of various hormones
- SCN neurons inhibit the pineal gland, thus inhibiting production of melatonin



Berry 2012

Synchronization of the circadian clock

- SCN contains cells that oscillate
  - Period of this rhythm is called *tau*
  - The mean value of tau in humans is 24.2 hrs
  - External stimuli (*zeitgebers*) entrain the SCN to the 24-hour day



Berry 2012, Xie 2019

Two Process Model

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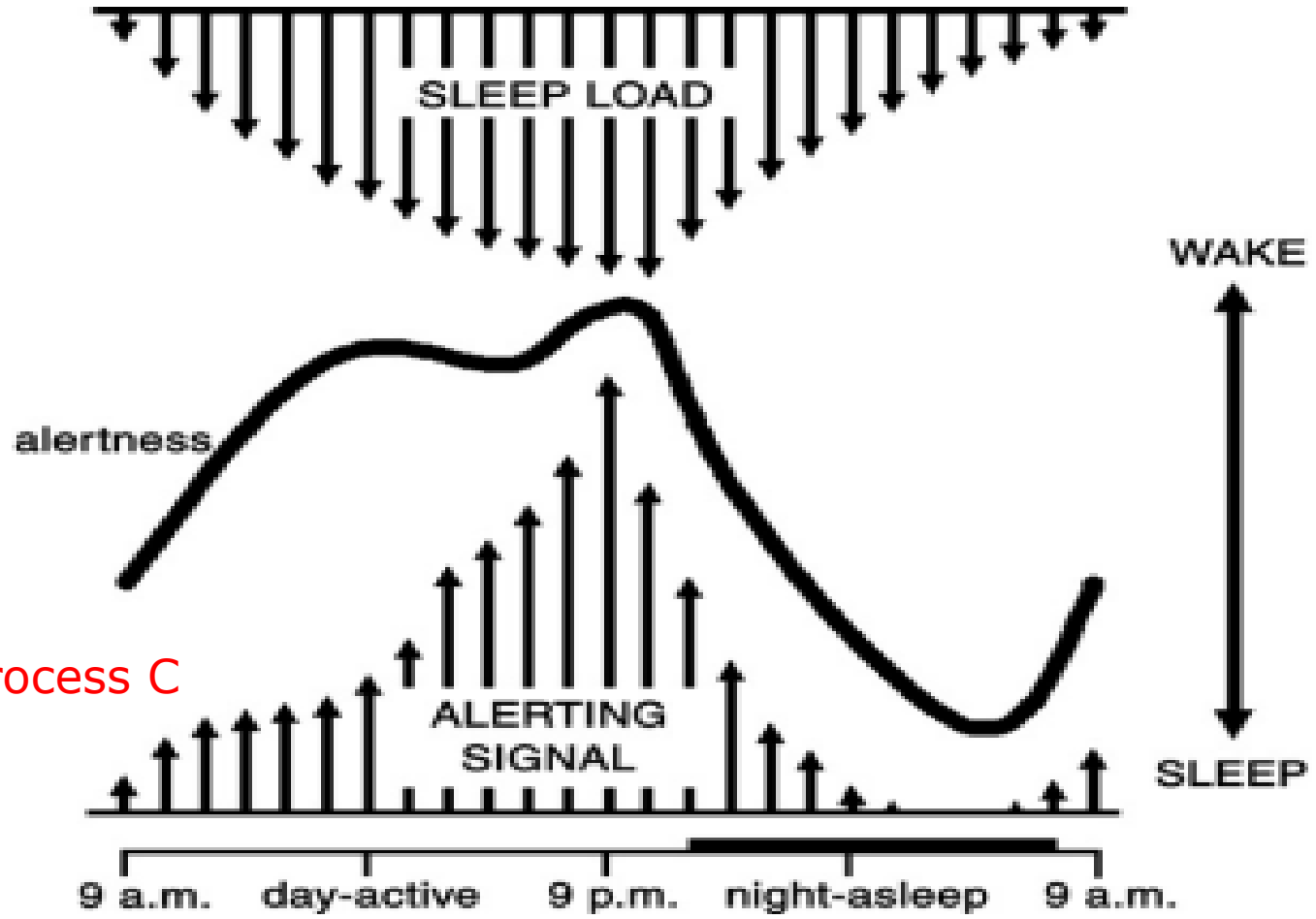

Beersma 2007

Circadian misalignment

- Sleep at the wrong time of circadian phase
  - Delayed sleep phase (especially in teenagers and young adults)
  - Advanced sleep phase (often seen in elderly people)
  - Shift work (overnight shifts, extended shifts, early morning shifts)

Circadian misalignment

- Sleep at the wrong time of circadian phase
  - Delayed sleep phase (especially in teenagers and young adults)
  - Advanced sleep phase (often seen in elderly people)
  - Shift work (overnight shifts, extended shifts, early morning shifts)
- Consequences
  - insufficient sleep
  - mood problems
  - cardiovascular disease
  - increased risk for cancer

Question

At what time of day should you be most concerned about risk for medical errors?

a) 8:00 – 10:00 am

b) 1:00 – 3:00 pm

c) 8:00 – 10:00 pm

d) 2:00 – 4:00 am

Question

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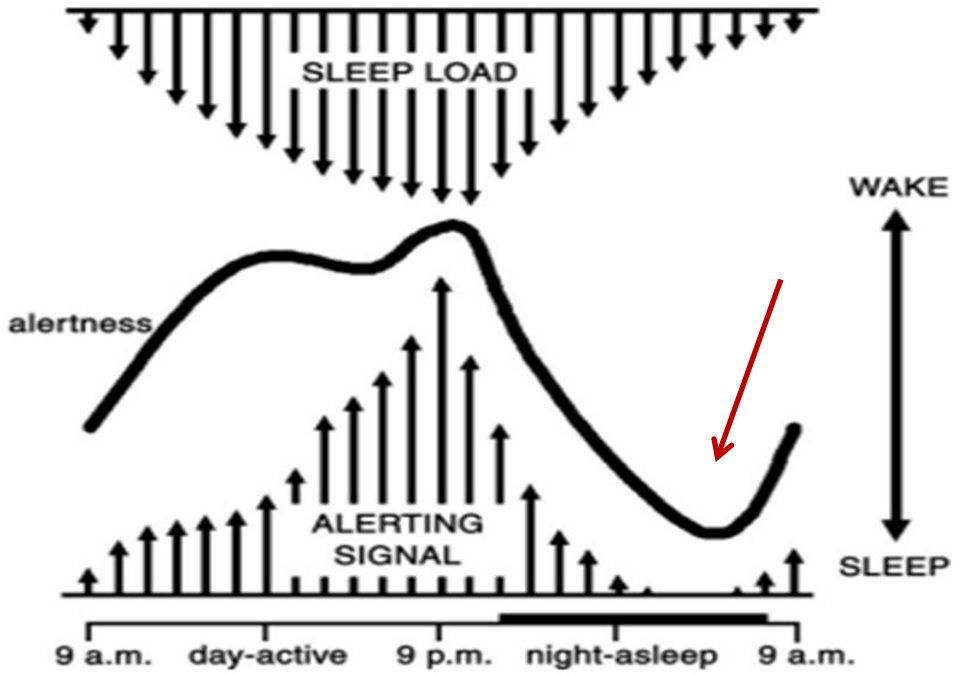

Pillars of healthy sleep

SUFFICIENT DURATION

AT THE RIGHT TIME

GOOD QUALITY

Good quality sleep

- Create a sleep environment free from distractions
  - Noise, light, pets, bed partner snoring

Distractions

Disrupted sleep due to pets

- 38% Americans report “always or often” having disrupted sleep due to pets

Adjusted sleep routine to accommodate a bed partner

- Over half (56%) of Americans adjust their sleep routine to accommodate a bed partner.
- One-third (33%) of Americans go to bed at a different time than desired.
- One-fifth (21%) of Americans sleep in another space.

AASM prioritization survey 2023, 2024

Good quality sleep

- Create a sleep environment free from distractions
  - Noise, light, pets, bed partner snoring
- Identify and treat sleep disorders
  - Obstructive sleep apnea
    - 10-15% of females and 15-30% of men
    - Atypical symptoms in women
  - Chronic insomnia
    - Up to 30% of general population
  - Restless leg syndrome
    - 5-15% of the population

Best practices for healthy sleep

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What do you regularly include in your bedtime routine?

Routine	Responders
Going to bed at the same time each night	680 (34%)
Turning off electronics before bed	594 (30%)
Reading	572 (29%)
Taking a bath/shower	788 (39%)
Meditating or doing breathing exercises	423 (21%)
Stretching	402 (20%)
Drinking tea or other nonalcoholic beverage	442 (22%)
Drinking an alcoholic beverage	292 (15%)
Smoking a cigarette or vaping	405 (20%)
Smoking marijuana	380 (19%)
Having sex	493 (25%)

Smoking marijuana

18-24: 62 (20%)
25-34: 109 (24%)
35-44: 120 (22%)
45-54: 69 (19%)
55-64: 15 (9%)
65+: 5 (3%)

Think about your own sleep hygiene…

ALCOHOL

EXERCISE

SHOWERING

WATCHING TV, NEWS, SOCIAL MEDIA

EATING

Sleep hygiene

Avoid naps

Sleep hygiene

Avoid naps

Eat regular meals

Sleep hygiene

Avoid naps

Eat regular meals

Limit liquids in the evening

Sleep hygiene

Avoid naps

Eat regular meals

Limit liquids in the evening

Eliminate afternoon/evening caffeine

Sleep hygiene

- Avoid naps
- Eat regular meals
- Limit liquids in the evening
- Eliminate afternoon/evening caffeine
- Avoid alcohol

Sleep hygiene

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- Avoid alcohol
- Eliminate nicotine and drugs

Sleep hygiene

- Avoid naps
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- Avoid alcohol
- Eliminate nicotine and drugs
- Engage in regular exercise, but not too late

Sleep hygiene

- Avoid naps
- Eat regular meals
- Limit liquids in the evening
- Eliminate afternoon/evening caffeine
- Avoid alcohol
- Eliminate nicotine and drugs
- Engage in regular exercise, but not too late
- Avoid late hot showers

Sleep hygiene

Avoid naps	Eat regular meals	Limit liquids in the evening
Eliminate afternoon/evening caffeine	Avoid alcohol	Eliminate nicotine and drugs
Engage in regular exercise, but not too late	Avoid late hot showers	Foster a sleep-friendly environment

Sleep hygiene

Necessary.

Sleep hygiene

Necessary.

But not sufficient.

Question

What is the control group in studies that test effectiveness of Cognitive Behavioral Therapy for Insomnia (CBT-I)?

a) Talk therapy

b) Relaxation techniques

c) Sleep hygiene

d) Reading before bed

Question

What is the control group in studies that test effectiveness of Cognitive Behavioral Therapy for Insomnia (CBT-I)?

~~a) Talk therapy~~

~~b) Relaxation techniques~~

c) Sleep hygiene

~~d) Reading before bed~~

Wind down routine

- Have a wind-down routine, a buffer zone, before you head to bed.
  - Disconnect from the stress of your day to relax 30-60 minutes before bedtime to help the brain to transition to sleep.
  - Avoid heavy exercise, bright lights, or disturbing images and content during the hour before bed.
  - Examples of relaxing activities may include reading a book, light stretching, listening to music.

Relaxation exercises

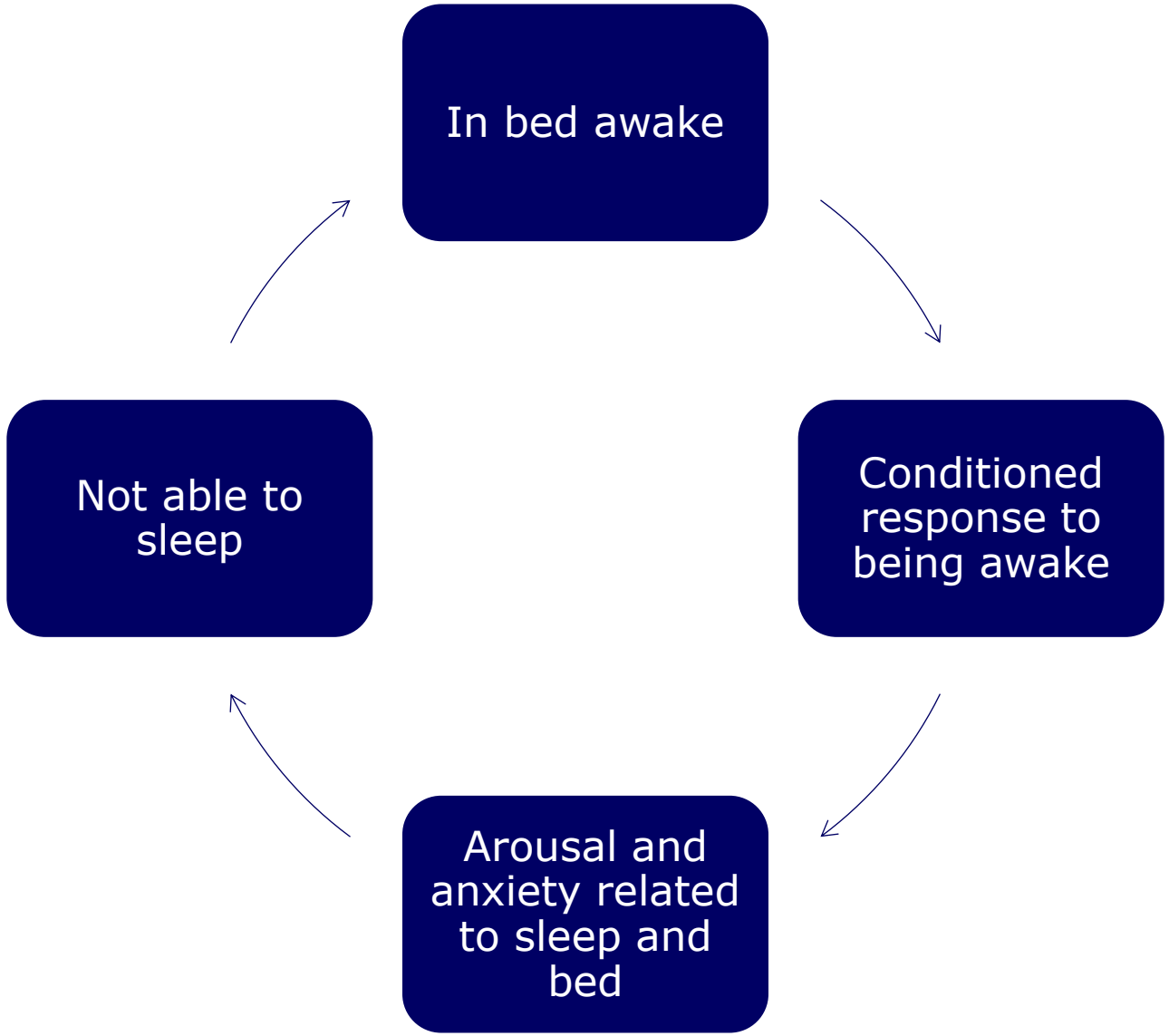
- Start to incorporate a dedicated relaxation technique (at bedtime and whenever you can't sleep)
  - Meditation
  - Breath work
  - Progressive muscle relaxation
  - Image rehearsal therapy

Regular sleep schedule

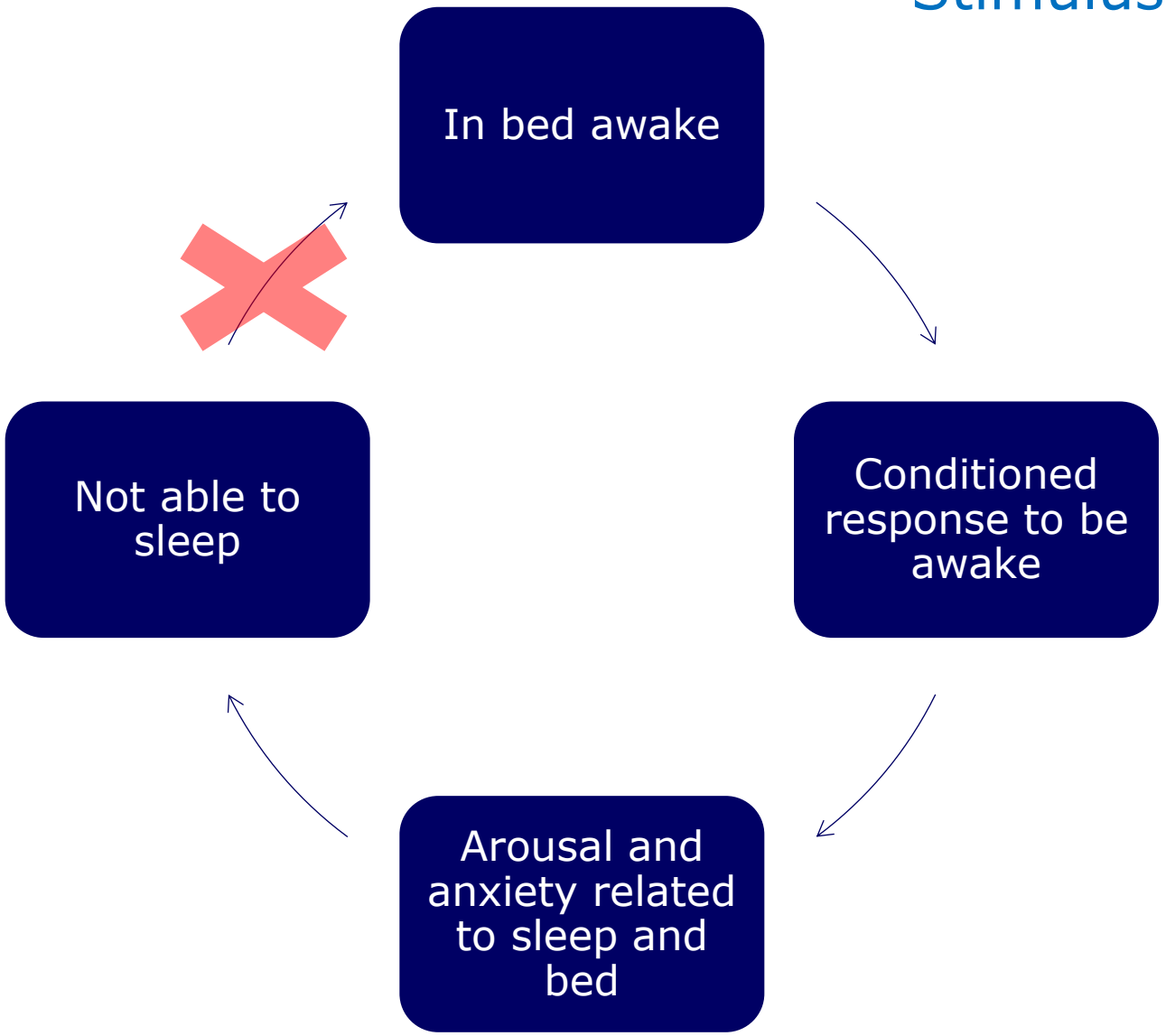
- One of the strongest predictors of insomnia is how regular sleep schedule is, especially the time you wake up.
  - As much as possible, try to keep a regular bedtime and regular wake time
  - It's alright to sleep on in days off to "catch-up" on sleep, but use this judiciously

Stimulus control

- Practice stimulus control
  - Arousal occurs as a conditioned response to the stimulus of the sleep environment, i.e. the bedroom
  - So, the longer you stay in your bed awake, the more your brain will associate the bed with being awake, and the worse your sleep will get


In bed awake
Conditioned response to being awake
Arousal and anxiety related to sleep and bed
Not able to sleep

Stimulus control



- Lay down only when you feel sleepy
- Don’t do anything in bed except sleep and have sex
- Do not watch the clock, but get up after 10-20 minutes if you can’t sleep
- If not able to sleep, go to a different room and do something quiet and relaxing
- Go back to bed when you feel ready to sleep
- Repeat as needed

Managing fatigue and shift work

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Managing fatigue

1. Bank sleep on days off
   - "Banking" sleep by getting up to 10 hours of sleep at night minimizes performance impairment during a subsequent period of sleep restriction
   - If you have an extended 24-hour shift coming up, sleep in as much as you can the day before

Managing fatigue

1. Bank sleep on days off
2. Use caffeine strategically
   - More effective if you use it intermittently
   - Avoid large doses because you may feel a crash or get a headache when it wears off

Homeostatic process: Process S

- Sleep load builds during wakefulness, falls during sleep
- There are several sleep-promoting neurochemical agents, including adenosine, prostaglandin D2, Growth Hormone-Releasing Hormone
- Adenosine binds to A1 receptors on the cholinergic neurons of the basal forebrain ⇒ decreasing the firing of these neurons ⇒ causing a reduction in cortical arousal
  - Caffeine blocks adenosine A1 and A2a receptors, promoting wakefulness

Kryger 2011

Managing fatigue

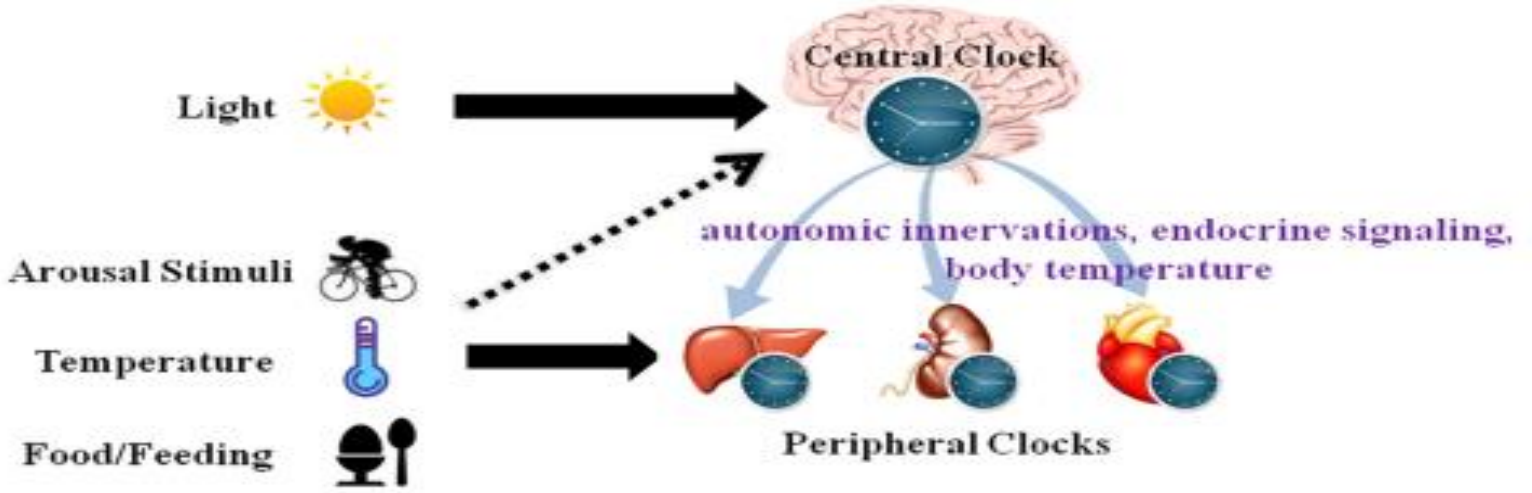
1. Bank sleep on days off
2. Use caffeine strategically
3. Nap strategically
   - Consider taking a nap before or during an extended shift
   - Monitor for post-nap grogginess (sleep inertia) that may impair your performance
   - Consuming caffeine before a nap may reduce post-nap grogginess

Managing fatigue

1. Bank sleep on days off
2. Use caffeine strategically
3. Nap strategically
4. Use bright light

Synchronization of the circadian clock

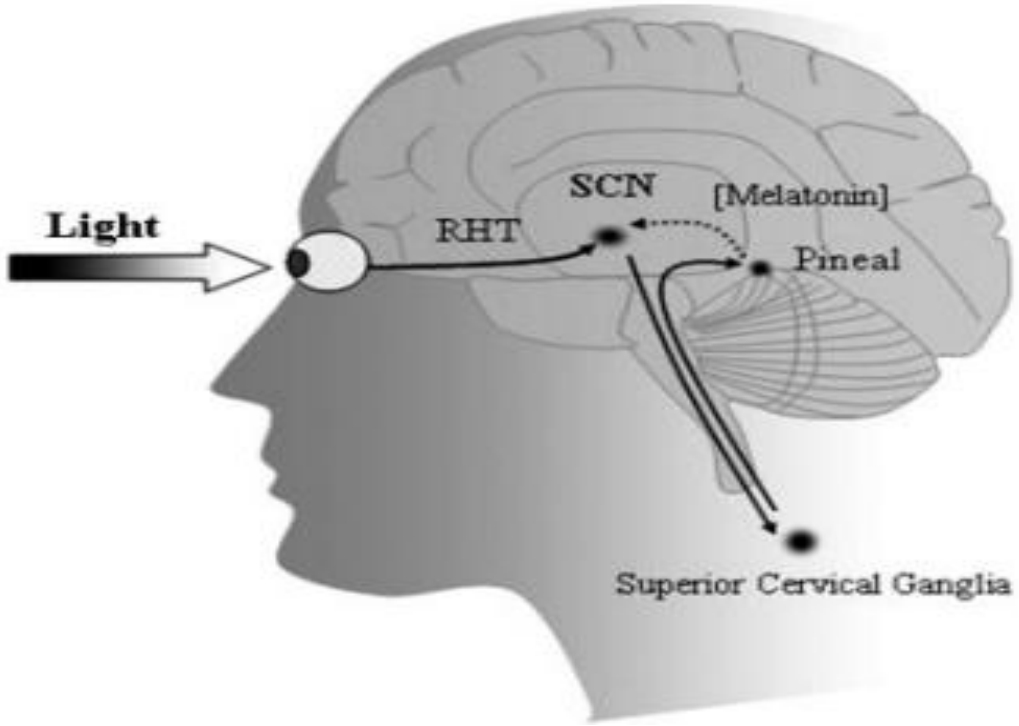
- Light is the strongest stimulus of the Suprachiasmatic Nucleus



Berry 2012, Xie 2019

Synchronization of the circadian clock

- Light inhibits melatonin production by the pineal gland
- SCN neurons inhibit the pineal gland, thus inhibiting production of melatonin



Berry 2012

Managing fatigue

1. Bank sleep on days off
2. Use caffeine strategically
3. Nap strategically
4. Use bright light
   - Body's internal clock is reset by light exposure each day, promoting sleepiness and night and alertness during the day
   - During a night shift, spend time in a bright room to promote alertness
   - Avoid lights during the day when trying to sleep

Managing fatigue

1. Bank sleep on days off
2. Use caffeine strategically
3. Nap strategically
4. Use bright light
5. Take a break
   - Engaging in vigorous activity or stretching for several minutes can improve alertness and performance for a short period of time after the activity break
   - Taking a shorter microbreak can also improve alertness and performance
     - For example, stretching the head, neck, and shoulders for a few minutes

Managing fatigue

1. Bank sleep on days off
2. Use caffeine strategically
3. Nap strategically
4. Use bright light
5. Take a break
6. Use checklists and communicate with your team to reduce fatigue-related errors

Shift work disorder treatment

Let’s break down the treatment into:

1. Improving diurnal sleep
2. Enhancing alertness

Improving diurnal sleep

- Avoid light exposure on the way home from work (AASM practice parameter: guideline)
- Sleep immediately after night shift
  - Light-blocking shades, ear plugs, eye mask
- Use two sleep periods
  1. Anchor sleep period of about 4 hrs taken every day regardless of schedule (typically 8 am to 12 pm)
  2. 3-4 hr sleep period taken depending on the work schedule
- Exogenous melatonin to promote daytime sleep (1-10 mg) (AASM practice parameter: guideline)

Morgenhaler 2007. Kryger 2011

Enhancing alertness

- Planned napping before or during shift (AASM practice parameter: standard)
- Light exposure during shift and avoidance of light after shift (AASM practice parameter: guideline)
- Caffeine use (AASM practice parameter: option)
  - Caffeine *before* a nap may reduce sleep inertia
- modafinil and armodafinil (AASM practice parameter: guideline)

Morgenhaler 2007, Kryger 2011

FDA approved medications for SWD

- Modafinil: 200 mg once a day (max 400mg/day)
- Armodafinil: 150 mg once a day
- Taken 1 hour before start of work shift
- Common side effects: headache, nausea, insomnia, dizziness
- Serious reactions: Stevens-Johnson syndrome, mood changes
- Drug-drug interactions: oral contraceptives

Question

A 32-year-old hospitalist is working nights, 7 pm to 7 am. She gets home, showers, eats, checks her phone. She then watches TV until she falls asleep around 11 am and wakes up at 3 pm to get kids from school. She is very sleepy at work.

What can you suggest that she does differently?

a) Take zolpidem at 8 am to help her fall asleep faster

b) Take a quick shower, eat a small meal and go to sleep as soon as she gets home

c) Take modafinil at work to help her be more awake

d) Do what she is doing, but take melatonin at work at 5 am

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Extended shifts and call: breaking it down

Extended shifts and call: breaking it down

- Pre-call strategies
- On-call strategies
- Post call strategies

Extended shifts and call: breaking it down

Pre-call strategies

- Maintain good general health
- Minimize sleep debt (bank on sleep!)
- Short nap before shift

On-call strategies

Post call strategies

Extended shifts and call: breaking it down

Pre-call strategies

On-call strategies

- Short naps in a cool, dark room
- Short breaks in natural light
- Caffeine to boost alertness
- Avoid dehydration, appropriate food intake

Post call strategies

Extended shifts and call: breaking it down

Pre-call strategies

On-call strategies

Post call strategies

- Standardized approach for hand-offs
- Pre-arrange for transportation home
- Prioritize sleep!

Final thoughts

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Take-home points

- Aim to get the recommended amount of sleep per night, 7-9 hours
  - Take naps if needed
  - Bank on sleep before extended shifts
- Follow good sleep hygiene practices
- Incorporate a wind-down routine to disconnect from the day
- Engage in a relaxation technique on regular basis
- Practice stimulus control if not able to sleep
- Prepare for shift work
- Look out for sleep disorders

AASM

TIP SHEET FOR HEALTH CARE PROVIDERS:

Prioritizing Sleep & Managing Fatigue

https://aasm.org/clinical-resources/provider-fact-sheets/

PRIORITIZING SLEEP

Health care workers are at particular risk for poor sleep. for physical, mental, and emotional well-being. Here are healthy sleep.

Take the time to value yourself and what you do fo

1. Create a schedule that prioritizes regular, sufficient sleep. Work and perso time consuming, making it hard to get sufficient sleep. Whenever you can, try to and wake time and schedule regular meal and exercise times appropriately. Havi help you obtain sufficient rest, nutrition and exercise.

2. Get at least 7 hours of sleep per 24 hours. Remember, some won't feel resto hours or more. If getting that much sleep in one bout is impossible due to your w a short "power nap" for an energy boost. Allow yourself time to become fully alert

3. Give yourself a "buffer" before you head to bed. Disconnect from the stres 60 minutes before bedtime. Avoid heavy exercise, bright lights, or disturbing ima the hour before bed. Examples of relaxing activities may include reading a book, or meditation; these can help the brain to transition to sleep.

4. Reserve your bed for sleep. Tempting though it may be to crawl under the co episodes of your favorite show, don't do it! Avoid all electronics — including you Engage in behaviors that help connect your bed with sleep. If you awaken and fir sleep, consider leaving the bedroom and doing something non-electronic, quiet to bed when you are ready to fall asleep.

5. Avoid alcohol and excessive caffeine. A drink at the end of a hard day may b disturb your sleep and reduce sleep quality and continuity. Don't drink alcohol w Caffeine in limited quantities can help increase alertness temporarily, but it may c excess or too close to bedtime.

6. Make your sleep space a sanctuary. A dark, quiet environment can protect s cover windows, and keep your electronics powered off. If you are a shift worker, s others know when you plan to sleep so that you have a chance to get uninterrupt

7. Stay active and head outdoors if possible. Not only is regular activity a goo work stress, but outdoor light timed during your wake period can help maintain y sleep-wake rhythm.

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TIP SHEET FOR HEALTH CARE PROVIDERS:

Prioritizing Sleep & Managing Fatigue

MANAGING FATIGUE

It is important for all health care workers to prioritize sleep to sustain alertness and performance while at work. The tips below may help mitigate on-the-job fatigue. However, following these tips cannot fully compensate for the effects of sleep loss, circadian misalignment, stress, or work overload. Whenever possible, achieving adequate rest and sleep is key.

Prioritize sleep and seek help for any sleep problems that arise.

1. **Bank sleep on days off**. Some studies have demonstrated that "banking" sleep by getting up to 10 hours of sleep at night minimizes performance impairment during a subsequent period of sleep restriction.
2. **Use caffeine strategically.** Caffeine is more effective if you only use it when you need it. Choose caffeine-free beverages during the day when you are rested and reserve caffeine for situations when you are feeling sleepy. Avoid large doses of caffeine because you may feel a "crash" or get a headache after the caffeine wears off. Consuming the amount of caffeine in a regular cup of tea or coffee can help sustain alertness and performance.
3. **Nap strategically**. For extended-duty or overnight shifts, consider taking a brief nap in the afternoon before, or on break during, the shift to reduce your fatigue at work. Note that post-nap grogginess may impair your performance upon waking from longer naps (e.g., > 30 minutes) , so plan around duties carefully. Taking caffeine just before a "power nap" may reduce the grogginess that one normally experiences upon waking.
4. **Use bright light, especially on the night shift.** Your body's internal clock is reset by light exposure each day. This causes your body to promote sleepiness at night and alertness during the day. Exposure to light at night helps promote alertness at night. During a night shift, spend time in a bright room when you can.
5. **Take an activity break or microbreak**. Engaging in a vigorous activity or stretching for several minutes can improve alertness and performance for a short period of time after the activity break. Aerobic activities such as taking a walk, short jog or bike ride can improve alertness and performance on the night shift. Taking a shorter microbreak — for example stretching the head, neck, and shoulders for a few minutes — has been shown to improve alertness and performance during surgical procedures.
6. **Use checklists and communicate with your team**. Fatigue can increase the risk of mistakes. However, using tools like checklists and cross-checking procedures with colleagues has been shown to reduce fatigue-related errors.

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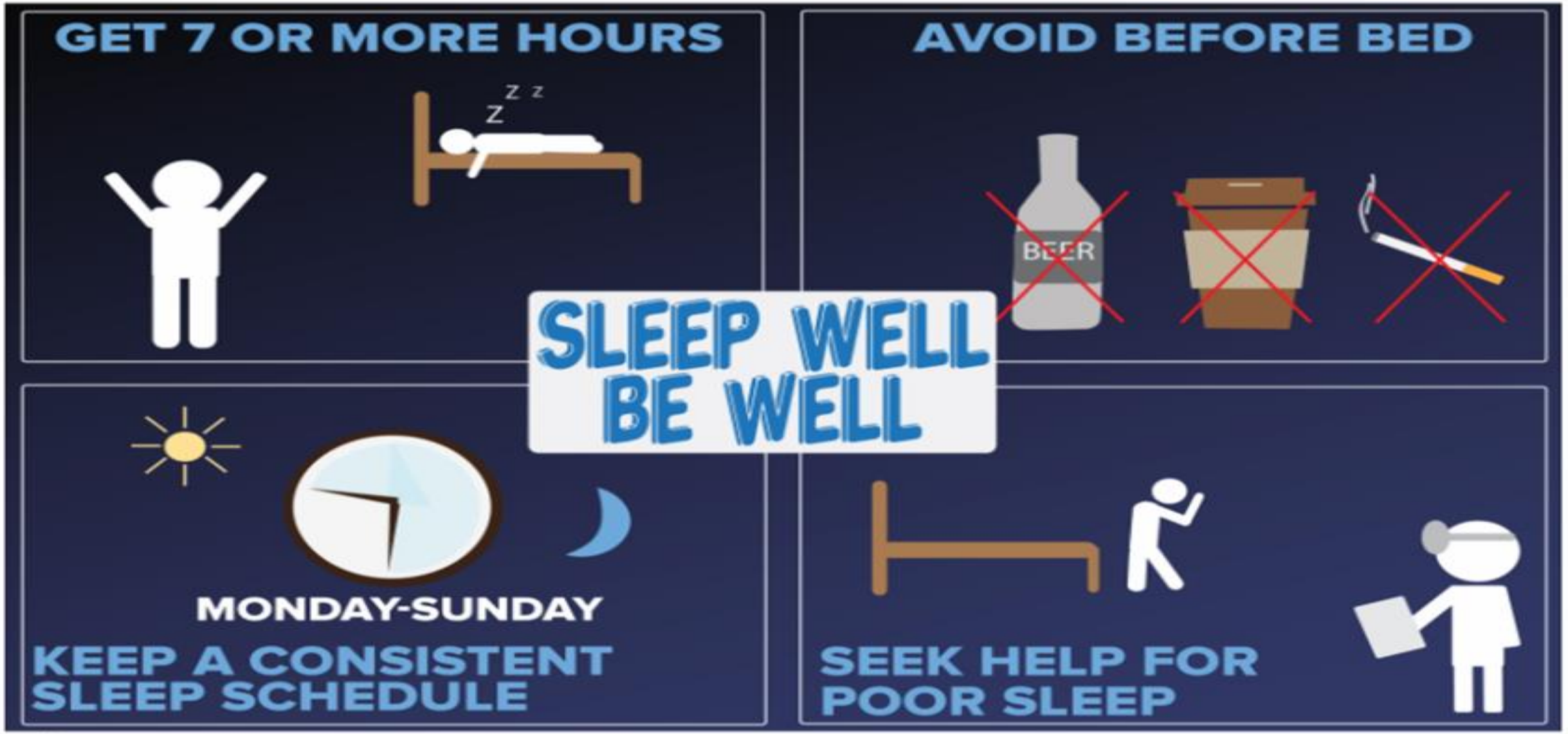
NATIONAL HEALTHY SLEEP AWARENESS PROJECT



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