Duty Hours, Fatigue Management and Mitigation

The GME Team
Disclaimers

- I am not a “sleep” expert.
- Most of this information was borrowed from other presentations.
- I do not claim any of this presentation as my own intellectual property.
Objectives

By the end of this session, participants will be able to:

1. List 4 effects of sleep loss and fatigue
2. List 2 warning signs of fatigue in others
3. List 2 warning signs of fatigue in yourself
4. Describe the most effective ways to combat fatigue.
The context...

• The Next Accreditation System (NAS)
  – Program accreditation
  – Institutional accreditation
    • Institutional review
    • Clinical Learning Environment Review (CLER)
CLER

– Provides frequent, on-site sampling of the learning environment
– Every 18 to 24 months
  • 2 weeks notice
– Assesses the following 6 focus areas:
  • Patient safety
  • Quality improvement
  • Transitions of care
  • Supervision
  • Duty hours oversight, fatigue management and mitigation
  • Professionalism
The Sponsoring Institution (SOM) must oversee:

- Resident/fellow duty hours consistent with the Common and Specialty/Subspecialty-Specific requirements across all programs, addressing areas of non-compliance in a timely manner;
- Systems of care and a learning and working environment that facilitate fatigue management and mitigation for faculty members and residents/fellows; and,
- An educational program for core faculty members and residents/fellows in fatigue management and mitigation.
Why are we concerned about resident fatigue?
1. Patient Safety
2. Resident Safety and Well-Being

Thag Anderson becomes the first fatality as a result of falling asleep at the wheel.
10 Reasons to Combat Fatigue

Lack of sleep:
1. causes accidents
Fatigue & Safety: Residents

- Increased risk of car accidents:
  - Kowalenko, et al. (2000)
  - Marcus & Loughlin (1996)
  - Steele, et al. (1999)
10 Reasons to Combat Fatigue

Lack of sleep:
1. causes accidents
2. dumbs you down
3. kills sex drive
4. ages your skin
5. can lead to depression
10 Reasons to Combat Fatigue

Lack of sleep:
6. makes you forgetful
7. can make you gain weight
8. impairs judgment
9. may increase risk of death
10. can lead to other serious health problems
Effects of Sleep Loss and Fatigue

• Voluntary and involuntary sleep latencies shorten
• Microsleeps intrude into wakefulness and cause lapses in attention
• Time-on-task decrements
• Learning and recall deficits
• Working memory and related executive functions decline
• Decreased ability to estimate your own ability to function (Van Dongen, et al., 2003)
The sleepier you are, the less accurate your perception of degree of impairment. Studies show that sleepy people underestimate their level of sleepiness and overestimate their alertness.
Physiology of Sleep & Fatigue

- Every adult has a genetically hard-wired sleep requirement that does not change with age and cannot be trained.
- Sleep is a physiologic drive state similar to hunger or thirst.
- When sleep requirements are not met a “sleep debt” ensues and sleepiness becomes manifest.
Circadian Factors

- Circadian clock located in the supra-chiasmatic nucleus of the hypothalamus
- Clock extremely resistant to change
- Programmed for 2 periods of decreased alertness
  - 3-7 am
  - 1-4 pm (Siesta!)

Lowest point in the cycle making it the period of greatest vulnerability to fatigue-related performance impairment.
Recognizing Fatigue (in others)

Difficulty:

- appreciating a complex situation while avoiding distraction
- keeping track of the current situation and updating strategies
- thinking laterally and being innovative
- assessing risk and/or anticipating consequences
- maintaining interest in outcomes
- controlling mood and avoiding inappropriate behavior
Specific Behaviors

- Nodding off
- Lethargy
- Irritability
- Poor coordination
- Difficulty with short-term recall
- Tardiness or absences
- Impoverished speech
- Flattened affect
- Disinhibition
Recognizing Fatigue (in yourself)

• Falling asleep in conferences
• Feeling restless and irritable with staff, colleagues, family, friends
• Having to check your work repeatedly
• Having difficulty focusing on the care of your patients
• Feeling like you really just don’t care
Strategies to Combat Fatigue

- Naps
- Caffeine
- Good sleep habits
- Diet
- Exercise
Naps are good!
The Art of Taking Naps

- Planned naps can improve subsequent alertness and performance (Dinges, et al. 1987)
  - Allow up to 45 minutes for sleep (reduces the likelihood of awakening in REM and experience sleep inertia)
  - Don’t take a nap too close to a planned sleep period
  - Allow a 15 minute wake-up period following a nap
Changing Shifts

• Use anchor sleep to ease schedule changes
  – Sleep as much as possible at the same time on both the shift you are coming off and the one you are going on
  – Try to carry a two to four-hour period of anchor sleep with you at each transition, and keep it on days off as well

For example, at least two days before rotating from days to evenings, and from sleeping from midnight to 6 a.m., start sleeping from 3 to 9 a.m. The period from 3 to 6 a.m. serves as anchor sleep.
Changing Shifts

• Protect your sleep
  – If you sleep during the day, darken the bedroom
  – Find a quiet place to sleep
  – Ask friends not to call during sleep hours
  – Try earplugs
  – Put a sign on the doorbell saying DO NOT RING; DAY SLEEPER, or install a switch that lets you turn off the doorbell
Caffeine

• Strategic use of caffeine involves ingestion at times that will promote alertness and performance during periods of vulnerability.

• Significant performance and alertness boost can be obtained from 200 mg of caffeine, with positive effects at doses ranging from 100 to 600 mg.
• Reaches peak concentrations in the bloodstream 30-60 minutes after consumption
• Typically takes 4-6 hours for its effects to wear off.
How does caffeine work?

• **Ergogenic** = increases the capacity for mental and physical labor
• **Adenosine antagonist**
Caffeine Metabolites

• **Theobromine** = vasodilator, increases oxygen and nutrient flow to brain and muscles

• **Theophylline** = smooth muscle relaxant, increases heart rate and efficiency

• **Paraxanthine** = increase lipolyis, leads to increased glycerol and fatty acids (fuel) in blood
Good Sleep Habits

• Use a pre-sleep routine to provide cues for relaxation and sleep
• Avoid negative sleep cues in the bed and bedroom
When technology is bad.
• Have a light snack or drink if hungry or thirsty:

Foods that help you sleep:
1. Fish
2. Jasmine rice
3. Yogurt
4. Whole grains
5. Kale
6. Bananas
7. Chickpeas
8. Fortified cereals
• Avoid caffeine intake at least 3 hrs before bed
• Avoid exercise within 2-3 hrs of bedtime
• Follow a 30-min “toss-and-turn” rule such that if you are unable to fall asleep in 30 min, get out of bed, engage in some sleep promoting activity, return to bed when ready
• Use relaxation techniques
• Limit intake of ethanol or nicotine-containing products close to bedtime
Exercise

• Do it! Just don’t do it too close to a planned sleep period.
If you are too tired to drive home…

1. Rest - call room, hospital quiet room
2. Get a ride home
3. Taxi vouchers – *NEW PROGRAM*

Transfer Center
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