Sleep and Fatigue

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Implications of Sleep Loss

- Residents had to endure long work hours
- Impact on resident and patient well-being recognized
- ACGME mandated duty hours for all residents, all specialties, all locations
- Sufficient sleep and good sleep hygiene are critical for the practice of good medicine
- Both are good for patient safety
Learning Objectives

- Identify the risk and impact of sleep loss for residents, faculty, and patients
- Adapt strategies to manage the effects of sleepiness and fatigue

Restricting Work Hours Alone Will Not Do Away With Fatigue

It is well known that sleep deprivation and disruption of the normal sleep pattern can severely impair function

Sleep is Regulated by:

- Circadian rhythm and homeostatic sleep drive
- Circadian rhythm causes us to feel sleepy at night and wakeful during the day
- Sleep is regulated homeostatically
- Sleep drive accumulates during the waking hours and decreases during the period of sleep
Lack of Sleep Affects Baseline Performance

- On average, humans require 8 hours of sleep during a 24 hour period
- <5 hours = decreased mental performance
- In medical settings, the consequences can be serious

Baldwin and Dougherty Survey

- Surveyed 3,604 residents
- 20% reported <5 hours of sleep/night
- 66% reported <6 hours of sleep/night

<5 Hours More Likely to Report

- Serious accidents or injury
- Conflict with other professional staff
- Use of alcohol
- Use of medications to stay awake
- Noticeable weight loss
- Working in an “Impaired Condition”
- Significant medical errors

Deterioration of Cognitive Function

- Baseline cognitive performance may be decreased by 25% after 1 night of no sleep
- 40% after 2nd night of no sleep
Epworth Sleepiness Scale

- Sleep deprived residents can score about the same as people diagnosed with sleep disorders;

- 84% of residents in one study scored in the range where treatment for a sleep disorder was indicated!!!
Major Signs of Fatigue

- Altered mood
- Apathy
- Impaired memory
- Inflexible thinking
- Nodding off
- Medical errors
- Microsleeps

Major Signs of Fatigue Con’t:

- Microsleep
  - Sleeping for a few seconds
  - Particularly dangerous
  - Can cause lapses in attention
  - Repeatedly checking work
  - Difficulty focusing on tasks (writing orders, etc.)

Excessive Sleepiness in a Resident

- Should be treated as a performance issue and calls for an evaluation

- May be a symptom of:
  - Hypothyroidism
  - Depression
  - Medication (beta blockade)
  - Primary Sleep Disorder

Understanding Our Role

- Do not need to diagnose and treat

- Identify

- Refer to the appropriate source
  - Employee Health Service
Fatigue Can’t Be Eliminated But It Can Be Managed Efficiently

- Program “solutions” can cause as many problems as they are designed to solve
- “Night Float” systems are associated with a greater risk for patient safety issues
- Exposes a resident to all of the risks associated with fatigue

The Challenge of Night Shifts

- Difficulty sleeping in the daytime
- Difficulty staying awake at night
- Use caffeine pharmacologically
- Recognize that no real adjustment to a sporadic and variable night shift schedule is possible

Prophylactic Naps May Help

- 1 hour nap prior to shift enhanced awake activity
- Experience less stress
- Felt workload was less burdensome

Adjusting to Night Shift

- Better to limit night work to 1 or 2 shifts
- Sleep prophylactically before night shifts
- Take mid/late afternoon naps
- Use caffeine
If Caffeine is Used On-Call

- Takes 30 mins. to take affect
- Lasts up to 3-4 hours
- Tolerance may develop
- Because it is a stimulate and a diuretic, it may interfere with subsequent sleep opportunities
- Alcohol should be avoided

Napping

- Napping during on-call hours is helpful
- Ameliorates effects of fatigue
- Timing is critical

When To Nap

- Nap prophylactically (“Banking” sleep helps)
- During the afternoon
- “Power Naps” (15-20 mins.) can be helpful
- During normal nocturnal sleep period
- Nocturnal naps may result in sleep inertia

Sleep Inertia Characteristics

- Impaired cognition
- Severe disorientation
- Transitory hypo vigilance
- Confusion
- Difficulty fully awakening
- Lasts up to 30 mins.
- Many people overestimate their ability to function in this state
- Take 15 mins to counter its effects
Slow Wave Sleep
• 40-60 min naps have more slow wave sleep

• Slow wave sleep results in more sleep inertia

To Counter Sleep Inertia
• Get vertical
• Turn on lights
• Get physically active
• Take a shower
• Counter with metabolic activities (caffeine)
• Plan for time to recover from sleep inertia

Sleep Debt
• Difference between:
  ▫ Hours of sleep needed
  ▫ Hours of sleep obtained

• Associated with:
  ▫ Slower response times
  ▫ Forgetfulness
  ▫ Confusion
  ▫ Depression
  ▫ Lack of motivation
  ▫ Decreased morale and initiative
  ▫ Awareness of being sleepy is blunted

Worst Nap Times
• Between 8-10 pm

• Any nap is better than no nap
Pre-shift and On-the-Job Naps

- Can help manage fatigue
- Cannot take the place of time off

Time Required to Recover

- 2 nocturnal sleep periods needed
- 36-48 hours off ideal
- The longer the sleep time, the better
- Time off should be used to catch up on sleep (competing items= family, financial)

Free Time

- Time off should be used responsibly, to reduce sleep debt
- Resident friendly programs should reduce non-essential, non-learning tasks
- Nurses etc. should eliminate inessential calls
- Evaluate the need to “moonlight” very carefully

Beware of the Drive Home

- Signs of danger:
  - Close eyes at traffic lights
  - Failure to remember driving
  - Continuous yawning
  - Drifting from lane to lane
- Myths
  - Chewing gum
  - Playing the radio
  - Opening the window
**Maggie’s Law**

- New Jersey: sleep deprived residents can be held **CRIMINALLY** liable for traffic accidents

**Fatigue Will Never Be Totally Eliminated**

- Even with the ACGME standards
- Manage it as effectively as possible
- Recognize its serious side effects
- Take naps to reduce adverse outcomes