Becoming a Night Shift Jedi: Do or Do Not, There is No Try

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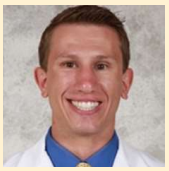

Emergency medicine (EM) physicians will inevitably work night shifts during their career. With transitions of days and nights occurring as frequently as once a week, it is imperative to maximize the quality of sleep and recovery time. Abundant research has been done on various aspects of sleep hygiene and effective techniques to combat difficulties surrounding night shift-work. This article will address some of those key factors including napping, caffeine, sleep environment, and long-term health consequences.

1. Preparing

Acquisition of sleep debt during the transition to and from night shift often arises from staying awake the entire day leading up to the first night.[1] By minimizing sleep debt going into night shift, performance can be improved and recovery hastened.[2]

a. Napping

Napping prior to night shift is effective at decreasing accumulation of sleep debt, improves performance, and increases alertness on shift.[1-8] Pre-shift naps should last no more than 60-90 minutes. This allows for completion of one REM cycle.[2] Although sleeping during the day can be difficult, naps are recommended between 2:00pm and 6:00pm when level of fatigue is highest.

b. Sleep Environment

Temperatures below 70°F help initiate and facilitate sleep.[9,10] Blackout curtains and sleeping masks also improve quality of sleep and enhance recovery, mood, and performance on shift.[1,2,9] Adjuncts such as ear plugs, fans, or other white-noise devices can be used to screen out disruptive sound.[11]

2. Eating

Digestion and metabolism are decreased at night to coincide with regular sleep patterns. Eating large meals during night shift can increase fatigue and decrease alertness. Eating a main meal before the shift and small snacks during the shift as needed can prevent undue fatigue.[2]

At night, there is a decrease in the satiety hormone leptin and an increase in the hunger hormone ghrelin. Additionally, metabolism and enzyme activity is lowest at night, putting night shift workers at an increased risk of obesity regardless of calories consumed due to tendencies of eating more fats and carbohydrate heavy meals.[12-15]

A meta-analysis investigating obesity found a dose-dependent effect of increased obesity with increasing number of night shifts. Another study found an increase of .24kg/m2 in BMI with every year exposed to night shifts.[16] The article was unclear on how many night shifts were worked in a year, but it appears the participants were full-time night-shift workers or nocturnists.

3. Caffeine

Smith et al. studied techniques for night shift workers and concluded that "The combination of caffeine consumption and an evening nap substantially improves night shift performance and enhances the ability to remain awake, and could possibly be one of the best countermeasures for night shift alertness…".1 4 mg/kg is the recommended dose to be taken around midnight and caffeine should be avoided 4-6 hours prior to sleep.[2,8,17] For reference there is about 100mg of caffeine in an average 8oz cup of coffee.

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4. Melatonin

Melatonin is a very controversial topic when it comes to sleep. There are well designed studies to include double blinded randomized placebo-controlled studies showing melatonin (5-10mg) decreases time to sleep and increases total sleep duration.[18,19] However, Cochrane reviews show there is no change with melatonin compared to placebo. Melatonin does have a favorable side effect profile and is fairly inexpensive.18 Although not guaranteed, it may provide benefit to some.

5. Light Exposure

Numerous studies have demonstrated scheduled bright light and darkness affects circadian rhythm.[10,20-23] Specifically, sunglasses on the commute home have been studied and proven to aid in the circadian rhythm shift.[1,8-10] This also goes along with using blackout curtains or sleeping masks for daytime sleeping.[1,2,9]

6. Resetting to Days

As previously discussed, light exposure is important in regulating the circadian rhythm. Research suggests a short nap (90-180 minutes) when getting home from the final night shift. Afterwards, exposure to bright light and exercise can help re-entrain the circadian rhythm. Lastly, it is recommended to go to sleep at a normal time and not stay up too late or go to sleep earlier than normal. All of these in combination help to realign to a normal "day" circadian cycle.[1,2]

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7. Health Effects

It is important to be aware of the long-term health effects as a career night-shift worker. Night shift is associated with cardiovascular disease, gastrointestinal symptoms, diabetes, breast cancer, prostate cancer, and gastrointestinal cancers.[22,24,25] Cancer risk specifically can be increased as much as 3% for every 5 years of night shifts worked.[26] EM physicians must be diligent about their scheduled cancer screening and maintain an otherwise healthy lifestyle.

Takeaways

- Take a nap before the first night shift
- Splurge on the caffeine (4mg/kg around midnight)
- Utilize sunglasses when leaving the hospital and on the commute home
- Keep the sleeping room cold, dark, and quiet. Use blackout curtains, ear plugs, and a white-noise device
- Consider melatonin as it is cheap and safe, but understand there is mixed research on the topic
- At the end of a string of nights, take a 1-2 hour nap, expose yourself to light, exercise, then get to bed at a normal time
- Lastly, be aware of the health risks associated with working night shifts ●

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