



# THE TOXICITY OF MIDDNIGHTS

by Frank Roman MD JD

**T**rick question: how long does it take to get use to midnight shift? The answer: never. Disheartening news to the 20-25% of the United States population that works midnights or outside the hours of 8 a.m. to 6 p.m. Homo Sapiens are diurnal, basically active all day with a programmed period of sleep at night. There can be some variation as described in one review describing morning people as Homo Larkensis and evening people Homo Owlensis. Despite the benefits of a 24-hour society, many challenges have become apparent including health issues. Shift work disorder is now a recognized condition in the International Classification of Sleep Disorders, specifically called Circadian Rhythm Sleep Disorder, Shift Work Type. The diagnostic criteria for this disorder includes: A. There is a complaint of insomnia or excessive sleepiness that is temporarily associated with a recurring work schedule that overlaps the usual

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time for sleep. B. The symptoms are associated with the shift work schedule over the course of at least one month. C. Sleep log or actigraphy monitoring (with sleep diaries) for at least seven days demonstrates disturbed circadian

and sleep time misalignment. D. The sleep disturbance is not better explained by another current sleep disorder, medical or neurological disorder, mental disorder, medication use, or substance use disorder.

It is estimated that the prevalence of shift work disorder may range as high as 5%. It even has an FDA approved treatment, specifically modafinil which is a wakefulness promoting agent to be taken one hour before the work shift begins.

Dr. Timothy Monk, who has done extensive research and publication on shift work has eloquently enumerated some of the factors associated with work that are most likely to cause problems. These include 1. More than five third shifts in a row without off time days. 2. More than four twelve hour night shifts in a row. 3. First shift starting times earlier than 7 a.m. 4. Rotating hours that change once per week. 5. Less than 48 hours of time off after a run of third shift work. 6. Excessive regular over time. 7. Backward rotating hours. 8. Twelve hour shifts involving critical monitoring tasks. 9. Twelve hour shifts involving a heavy physical work load. 10. Excessive weekend working. 11. Long commuting times. 12. Split shifts with inappropriate break period lengths. 13. Shifts without appropriate shift breaks. 14. Twelve hour shifts with exposure to harmful agents and substances. 15. Overly complicated schedules that make it difficult to track or plan ahead. In listing these factors one finds it morbidly humorous - what person in our present society is not guilty of one or more of these factors in their present employment? Dr. Timothy Monk goes on to espouse the mechanisms responsible for this

“Desynchronization”. He divides them into three mechanisms: 1. The disrupted sleep obtained during the day with subsequent partial sleep deprivation. 2. The new schedule of wakefulness which clearly opposes the “down phases” of various physiological functions that are normally coincidental with sleep in day oriented individuals. 3. The disjointed individual components of the circadian system. This in turn can lead to clinical symptoms including many ill-defined complaints. Some of these complaints include malaise, gastrointestinal dysfunction, depressive mood, chronic pain, fibromyalgia like syndrome, and performance decrements. Moreover, it goes without saying the silent and slow devastation of any social or family life.

We are all aware of the big picture of how this affects our society, for example the onsite nuclear accident at Three Mile Island, the environmental accidents of Chernobyl and Exxon Valdez, and the explosion of the space shuttle Challenger. In recent years both the private and public sector including the federal government have been studying and trying to address the challenges of our 24-hour society. However, despite many sectors of our society going 24/7, our justice system continues to be day shift with a tremendous backlog in cases. It goes without saying that justice should be blind but not tortuously slow. One can imagine a second shift of judges, court employees, juries, and lawyers maximizing the use of the physical resources in our court system. However on the other hand, do you really want to be at the mercy of a moody, sleep-deprived judge? The reason this is briefly mentioned in this article is my involvement in civil litigation regarding a shift worker who was diagnosed with significant obstructive sleep apnea and started on nasal CPAP. As part of his initial treatment plan, he was temporarily restricted from working the midnight shift since part of his job description included operating a forklift. He was terminated soon after. The patient alleges he was wrongfully terminated due to his medical disability. His employer denies this and states he was fired for other reasons. To put it in simple terms this is called mixed motives where he may have actually been fired for his medical disability but they bring up other alleged shortcomings. This is similar to ones teenage kids who invite you to dinner on the premise to spend quality time with you when they really want you to pay for spring break vacation or a new cell phone. Nonetheless, one of the central points of this litigation will be the health consequences and risk factors associated with the unnatural act of working midnight shift. If this sounds too dramatic, let me end with the fact that the World Health Organization has classified shift work as a carcinogen.

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