

Shift Work Overview, Causes for Shift Work Disorder

Overview of Shift Work

Nowhere are the effects of lifestyle on sleep more evident than in shift work disorder, also called shift work change (SWC) and shift lag. As the global marketplace continues to turn the time-to-productivity ratio to its favor, more and more employees are needed to work unconventional shifts. Nearly 20% of employees in industrialized countries are employed in shift work, which requires them to drastically change their sleep habits weekly or even daily.

While there are few statistics for the prevalence of shift work disorder, approximately 20% of shift workers report falling asleep during work, which increases the risk of industrial accidents and decreases productivity. Ironically, shift work can diminish the economic gain it is designed to create.

Causes for Shift Work Disorder

There are two types of shift work. Employees can either (1) work an unconventional nonfluctuating shift, like 11 p.m. to 7 a.m., or can (2) alternate between the three different shifts. Both versions of shift work produce a specific set of effects.

A person can usually adjust to working a new shift, if the change is permanent. Although the worker may have to get used to sleeping during daylight, his or her circadian rhythm can adjust to the body's new sleep-wake routine. It is common for a person who sleeps from 8 a.m. to 4 p.m. consistently to function productively at work from 11 p.m. to 7 a.m. Circadian rhythms operate on a 24-hour cycle. In nonfluctuating shift work, the shift in circadian rhythm remains constant once the body adapts to it. Resynchronization may take a while, but it is possible.

Shift work change affects circadian rhythm, which, similar to delayed sleep phase syndrome and jet lag, desynchronizes the body's sleep-wake schedule. This happens when shift workers toggle between the three common shifts, each one-third of the 24-hour day. The first shift usually runs from 7 a.m. to 3 p.m.; the evening or second shift generally lasts from 3 p.m. to 11 p.m.; and the night shift is usually from 11 p.m. to 7 a.m. Many shift workers frequently change shifts, thus intensifying the severity of circadian rhythm disturbance.

The body simply cannot rest and rebuild when circadian rhythms are frequently disrupted. Sleep-wake routines vary with continually changing external cues, known in the sleep medicine world as "zeitgebers," the German word for "timer." In shift work disorder, zeitgebers such as daytime and nighttime are never permanently synchronized with shift end time and shift start time. For SWC patients, predisposition to sleep and wake is governed by consistently mistimed circadian rhythm and alternating external cues.

For example, a person may work the night shift for five nights in a row, followed by two days off. During the two days off, the person resumes a normal daytime (diurnal) activity with family or friends. This disrupts the person's previously adjusted circadian rhythm, and he or she must readjust their sleep-wake pattern when they go back to work. Without a constant pattern, biological rhythms remain out of synch.

Shift Work Disorder Complications

Complications of Shift Work Disorder

Many factors such as age, sleep disorder, psychiatric disorder, and family demands make shift work difficult. The ability to stay active during different times of the day varies among people, as does their preference for wake and sleep time. People who wake up early in the morning and are most active early in the day have a more difficult time adjusting to shift work than people who prefer to stay up late at night.

Predisposition to sleep pattern may figure largely into the lives of shift workers. Aging, however, has a significant detrimental effect on a person's ability to cope with shift work. It is common for a person who has been working shifts for years to start having difficulty as they grow older. Many sleep disorders, like sleep apnea, surface later in life. Sleep disorders, such as sleep apnea or narcolepsy, usually compound the effects of shift work disorder.

Generally, mood cycles and physiological processes, like the fluctuation of hormone levels, play significant roles in sleep routine. These factors are, in turn, altered by frequently changing sleep habits. So there may be complications for a shift worker who suffers from, say, seasonal affective disorder or depression. Spending nights awake and days asleep may intensify the effects on a person with a psychiatric disorder.

Coping with the Socioeconomic Consequences of Shift Work Change

Shift work places demands on family, infrastructure, and the management of employee resources. Often, the time spent off work is as frustrating to the employee as late-night work. In approximately 30% of nonfarm families in the United States, one spouse works shifts. Industries are currently making efforts to reform and regulate the quality of shift work for their employees.

In addition to the breakdown of circadian rhythm, other factors keep employees from sleeping during the day. For example, their sleep is often interrupted by daytime phone calls from telemarketers. Shift workers may have family obligations that shorten their sleep time, such as caring for young children or an elderly family member. Consequently, shift workers tend to sleep poorly.

Many studies show that workers who frequently change shifts are generally more stressed than conventional day workers and that shift workers get less sleep overall. Studies have shown that, on average, shift workers sleep for 1.5 hours less a day than permanent day workers. In fact, clinical studies have documented the lack of sleep in employees who claim to experience stress, and have differentiated these employees from others on the same schedule who do not claim to suffer stress. It seems as though certain people are better suited for shift work than others. And, yet the reality is that many industrial shift-working employees have severely limited options for occupation.

Shift Work Tips & Guidelines, Shift Work Disorder Treatment

Tips & Guidelines for Shift Work

There are some general guidelines for decreasing the effects of shift work:

- Decrease the number of night shifts worked in a row. Shift workers working the night shift sleep less than day workers and become progressively more sleep deprived over several days. If one can limit the number of third shifts to five or less, with days off in between, recovery from sleep deprivation is more likely. If working a 12-hour shift instead of the usual 8 hours, it is recommended that one limit work to four shifts in a row. Furthermore, one should optimally have more than 48 hours off after a string of night shifts.
- Avoid extended work hours; this includes working prolonged shifts and excessive overtime, and taking short breaks.
- Avoid long commutes; they use up valuable time that could be spent sleeping.
- Avoid rotating shifts more than once a week. It is more difficult to deal with such alteration than it is to work the same shift for a longer period of time. The sequence of shift rotation can be important as well. Working the first shift, then the second shift, and then the third shift is easier than working the first, the third, and then the second shifts.
- Get sufficient sleep on days off. Practice good sleep hygiene by planning and arranging a sleep schedule and by avoiding caffeine, alcohol, and nicotine.
- Avoid reliance on stimulants, both over-the-counter and otherwise. At best, caffeine, uppers, and up-all-night agents only temporarily fool the body into thinking its functioning properly, which further complicates sleep disorder.

Treatment for Shift Work Disorder

In addition to the guidelines, the practice of proper sleep hygiene, and the adherence to an optimal shift-work schedule, some patients of SWC find medication to be helpful. Antidepressants, which are used in the treatment of various sleep disorders, are known to positively affect and sometimes readjust circadian rhythm. Patients who experience the effects of SWC often find that the use of benzodiazepines results in predictable, easier sleep. Treatment for patients with SWC who suffer from insomnia or excessive daytime sleepiness can involve varying the levels of drug dosage, entrainment, and stress-reduction therapy.

Although substance abuse worsens the effects of sleep disorders, some experimental approaches to the treatment of sleep-phase syndromes involve the use of caffeine to regulate wake times and eating schedules. Perhaps entrainment is possible through the use of artificial cues, which assume the role played by conventional indicators, like light and dark.

Industry Response to Shift Work Change

Many people work shifts because of socioeconomic considerations and, for them, stopping shift work is not a realistic option. As a result, industry is currently consulting with companies who specialize in industrial operations management. Companies that operate 24 hours a day are establishing policies to standardize the frequency, duration, and type of shift work. These measures usually involve personal diagnostic surveys and employee interviews that are aimed at understanding employee needs and concerns. Many shift-work employees are finding that their complaints are being heard.