

# Adapting to Shiftwork 5 Influencing Factors

As escalating health care costs continue to significantly impact on corporate profits, many companies are realizing that proactive measures must be taken to manage these costs.

According to CIRCADIAN studies on financial costs associated with 24/7 operations, U.S. businesses spend an additional \$36.5 billion annually on health care to support 24/7 operations.<sup>1</sup>

In most cases, the distinct health risks faced by shiftworkers can be controlled, monitored and potentially reduced through a collaborative effort of both management and workers.

Knowing these crucial factors will facilitate the design of programs that improve employee health and enhance productivity while also reducing the costs, risks and liabilities of shiftwork operations.

## 1. Gender

Gender has been recognized as a factor affecting shiftwork tolerance, as several studies have found that men have a greater tolerance for shiftwork than women.<sup>2</sup>

Several studies have reported that female shiftworkers tend to have more sleep-related problems than male shift workers.<sup>4,5,6,7</sup>

In particular, one study found that female shiftworkers report difficulties falling asleep, problems with insomnia and using sleeping aids to fall asleep more frequently than male shift workers.<sup>2, 4</sup>

#### **SLEEP & GENDER**

Because female shiftworkers report needing more sleep than men, a large disparity exists between women and men in terms of perceived sleep needs and obtained sleep.

Not surprisingly, the major problem is related to the night shift. While male and female shiftworkers report getting similar amounts of sleep when working the morning and evening shifts, 48% of female workers get six hours of sleep or less when working the night shift, compared to 41% of men (Figure 1).<sup>3</sup>

Figure 1: Sleep duration for men and women across different shifts<sup>3</sup>



Gender differences in sleep quality also occur on the night shift. Twenty-eight percent (28%) of female shiftworkers report "poor" sleep when working the night shift, compared to just 20% of male shift workers.<sup>3</sup>

### FATIGUE AT WORK

Female shiftworkers report feeling tired while working more frequently than their male counterparts.<sup>3</sup>

However, male shiftworkers report nodding off and making mistakes while working more often than women.<sup>3</sup>

## 2. Age

Problems with work performance tend to increase with age, the critical age being 40-50 years, when based on measures of subjective sleepiness, performance tests, recovery after work and sleep time.<sup>2</sup>

However, in terms of the risk of developing shiftwork related health problems and shiftwork tolerance, research studies report more favorable outcomes for older workers.<sup>3</sup>

This may be due to the "healthy shift worker effect", in which older workers represent the individuals who are healthier and have always been better at coping with shift work, even at a younger age. Previous experience with shiftwork clearly influences one's tolerance to shift work.

Overall, adjustment to shift schedules seems to improve with age and shiftwork experience. The percentage of shiftworkers reporting that their health would improve with a different schedule decreases from 51% for the group 25-34 years old, to 27% for workers aged 55 or older.<sup>3</sup>

## 3. Circadian Profile

A person's "circadian profile" tends to affect shiftwork adaptation. Three main characteristics have been extensively evaluated: morningness/eveningness, flexibility of sleeping habits, and one's ability to overcome drowsiness.

#### MORNINGNESS/EVENINGNESS

Morning types, or "larks," are naturally more alert in the morning than in the evening, and their circadian rhythms (temperature, alertness, etc.) reach a maximum earlier in the day. The opposite is true for evening types, or "owls."

Scientists have demonstrated that morningness/eveningness is linked to a specific set of genes.

Morningness is also associated with an increased rigidity in sleep patterns–morning types find it more difficult to sleep during the morning than evening types, which further decreases morning types' adaptation to night work.<sup>3</sup>

Shiftworkers in 24/7 operations who prefer to get up late (after 9 a.m.)–evening types–report sleeping more hours and getting better sleep on the night shift.<sup>3</sup>

Surprisingly, evening types report more problems adapting to their work schedule.<sup>3</sup>

#### FLEXIBILITY OF SLEEP HABITS

Flexibility of sleep habits indicates an individual's self-perceived ability to sleep at different times during the day or night. The ability to overcome drowsiness defines their ability to sustain alertness.

#### ABILITY TO OVERCOME DROWSINESS

Researchers have found that the ability to overcome drowsiness is the best indicator of shiftwork tolerance after three years of shiftwork.<sup>3</sup>

Both flexibility of sleep habits and ability to overcome drowsiness have been found to be related to a better long term shiftwork tolerance.<sup>3</sup>

# 4. Psychological and Behavioral Factors **PERSONALITY**

Two psychological factors, extroversion/introversion and neuroticism, have been widely studied in relation to shiftwork tolerance. Several studies have found that extroverts adjust somewhat faster than introverts to shift work.<sup>2</sup>

However, neither extroversion nor neuroticism have any value in predicting adaptation to shift work.<sup>2</sup>

#### LOCUS OF CONTROL

Locus of control (that is, the internal versus external attribution of control with regard to managing problems) has recently been introduced as a factor affecting shiftwork tolerance – especially in regards to one's locus of control in terms of shift work.

Internal locus of control (when the individual feels that rewarding experiences are contingent upon their own behavior and attributes) has been associated with better shiftworktolerance.<sup>3</sup>

#### COMMITMENT TO SHIFTWORK

Individual strategies for coping with shiftwork have been evaluated and seem to be a promising factor in predicting shiftwork tolerance.

Commitment to shiftwork means that workers are willing to schedule their lives around working non-traditional hours. Correct sleeping habits, appropriate exposure to bright light, good nutritional practices, and physical exercise may all have a crucial effect on shiftwork tolerance.

In fact, "commitment to shift work" has been cited by several authors as the most important individual factor affecting shiftworktolerance.<sup>3</sup>

## 5. Social Factors

Family and social factors can also affect one's adaptation to shift work. It's evident that the support spousal or partner support plays a pivotal role in the one's adaptation to shift work.

Not surprisingly, the presence of children increases domestic responsibilities and may result in more difficulties adapting to a shiftwork lifestyle.

Shiftworkers with good family lives report better health status.<sup>3</sup> This finding could be related to an absence of family conflict–a recognized source

Long commutes interfere with everyday life, restricting free time and reducing sleep. Workers with commutes that are 45 minutes or longer have been found to report higher stress levels, more health problems, and higher absenteeism rates than workers with commutes of 20 minutes or less.<sup>3</sup>

## Shiftwork Lifestyle Training

Most shiftworkers don't know how to adjust their lifestyle to minimize the negative effects of working around the clock. As a result, workers' job performance, safety, health, and family life suffers as company profits and productivity fall.

Training workers on how to manage a shiftwork lifestyle is a powerful tool for improving your employees' physical and psychological well-being, thereby increasing morale and effectiveness.

In fact, research reports have found that turnover and absenteeism rates are higher in facilities that do not provide some type of shiftwork lifestyle

training.

## Download Our Free White Paper

Download our complementary CIRCADIAN® white paper, "Shiftwork Lifestyle Training: Employee and Employer Benefits"



## About CIRCADIAN®

CIRCADIAN® is the global leader in providing 24/7 workforce performance and safety solutions for businesses that operate around the clock. Through a unique combination of consulting expertise, research and technology, software tools and informative publications, CIRCADIAN helps organizations in the 24-hour economy optimize employee performance and reduce the inherent risks and costs of their extended hours operations.

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