

PATIENT EDUCATION BROCHURE

Recognizing and Managing Shift Work Disorder, an Underdiagnosed Condition: *Improving Quality of Life*



Do You Have Shift Work Disorder?

- Do you often feel tired or sleepy at work?
- Do you have trouble getting to sleep or staying asleep?
- Do you do shift work?
- What are your work hours?
- What are your sleep times on work days? On days off?
- Do you often struggle to stay awake, or have you ever fallen asleep while driving to or from work?
- Does your tiredness cause difficulty with your concentration, memory, or ability to pay attention?

If you work a shift that involves a nonconventional sleep-wake schedule and have **excessive sleepiness** and/or **insomnia** for ≥ 1 month, you may have Shift Work Disorder.

What Are Shift Hours?

Shifts outside the traditional 9 AM to 5 PM:

- Early morning: ~6 AM - 2 PM
- Evening: ~3 PM - 11 PM
- Night: ~11 PM - 7 AM
- Rotating: Periodic time changes among days, evenings, nights
- Split: 2 distinct work periods per day



How Shift Work or Shift Work Disorder May Affect Your Quality of Life

- Fewer physically and mentally healthy days per month*¹
- Falling asleep at work*²
- Having an occupational accident in the past year*²
- Impatience²
- Avoiding interactions with coworkers²
- Missed family and social events¹³
- Depression¹³
- Marital instability*⁴
- Job stress, emotional exhaustion*⁵



*Shift work; ¹SWD.

1. Barnes-Farrell J, et al. *Appl Ergon*. 2008;39(5):589-596.
2. Swanson LM, et al. *J Sleep Res*. 2011;20:487-494.
3. Drake CL, et al. *Sleep*. 2004;27:1453-1462.
4. Davis KD, et al. *J Marriage Fam*. 2008;70(4):991-1003.
5. Jamal M. *Stress Health*. 2004;20:113-119.

Epworth Sleepiness Scale¹

How tired/sleepy are you?

Fill out the brief Epworth Sleepiness Scale and then discuss the results with your clinician.

A total score **higher than 10** indicates that you have **significant sleepiness**.²

Rate Your Chance of Dozing Off: 0 = None, 1 = Slight, 2 = Moderate, 3 = High

Situation	Chance of Dozing Off
Sitting and reading	
Watching TV	
Sitting inactive in a public place (eg, in a theater or at a meeting)	
As a passenger in a car for an hour without a break	
Lying down to rest in the afternoon when circumstances permit	
Sitting and talking to someone	
Sitting quietly after a lunch without alcohol	
In a car while stopped for a few minutes in traffic	
Total score	

1. Johns MW. *Sleep*. 1991;14:540-545.

2. Panossian LA, Avidan AY. *Med Clin North Am*. 2009;93:407-425.

How Managing Shift Work Disorder Can Improve Your Quality of Life

Managing shift work disorder symptoms can result in improved health and reduced risks for:

- Excessive sleepiness
- Insomnia
- Mood disturbance¹
- Impaired work performance²
- Poor concentration
- Low energy level
- Strained personal relationships
- Safety issues: drowsy driving, accidents, errors^{1,3,4}

And LOWER your risks for:

- Gastrointestinal problems^{1,5}
- Heart disease¹
- Stroke⁶
- Cardiovascular and metabolic dysfunction^{7,8}
- Overweight/obesity⁹
- Cancer¹⁰⁻¹²

Effectively managing your shift work disorder and getting proper sleep can **improve your quality of life**, including your health, functioning, and safety—**at work, at home, and on the road.**

1. Drake CL, et al. *Sleep*. 2004;27:1453-1462.
 2. Smith MR, et al. *Sleep*. 2009;32:1481-1489.
 3. Folkard S, et al. *Occup Med*. 2003;53(2):95-101.
 4. National Highway Traffic Safety Administration/National Center on Sleep Disorders Research (NHTSA/NCSDR) http://www.nhtsa.gov/people/injury/drowsy_driving1/drowsy.html#Figure 3.
 5. Lu ZW, et al. *Eur J Gastroenterol Hepatol*. 2006;18:623-627.

6. Brown DL, et al. *Am J Epidemiol*. 2009;169:1370-1377.
 7. Bøggild H, Knutsson A. *Scand J Work Environ Health*. 1999;25:85-99.
 8. Martino TA, Sole MJ. *Circ Res*. 2009;105:1047-1061.
 9. Zhao I, et al. *J Occup Environ Med*. 2011;53(2):153-158.
 10. Hansen J. *Epidemiology*. 2001;12:74-77.
 11. Davis S, et al. *J Natl Cancer Inst*. 2001;93:1557-1562.
 12. Kubo T, et al. *Am J Epidemiol*. 2006;164:549-555.

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Sleep/Wake Log

Keeping a sleep/wake log for 7-14 days can help clarify your sleep/wake patterns. The following sleep/wake log can be copied and filled out, then you can discuss your results with your clinician.

Name: _____ WEEKLY SLEEP & WAKE LOG Date: _____

- Take the time to fill out this form for last night's sleep when you get up to start your day. (No need to watch the clock, just estimate sleep time or time awake).
- You will indicate **what time you actually began trying to fall asleep** by drawing a down arrow. ↓
- You will indicate **what time you got up to start your day** with an up arrow. ↑
- Shade the boxes showing **when you think you were sleeping**. example:

--	--	--	--	--	--
- If you are awake for more than half an hour, leave that area un-shaded.
- In the morning, under the "rested" column, mark how rested you felt upon arising that morning, on a scale of 1-7, 1 being most rested.
- In the evening, under the "sleepy" column, mark how sleepy you felt that day, on a scale of 1-7, with 7 being most sleepy.
- Before you go to bed indicate by **letter** what times you took (M)edications, (C)affeine (# of beverages or chocolate pieces), or (A)lcohol (# drinks, beers, or ounces), and shade in time for any naps that day.

DATE	Afternoon				Evening				Nighttime				Morning				Rested?										
	Sleepy?	12 pm	1 pm	2 pm	3 pm	4 pm	5 pm	6 pm	7 pm	8 pm	9 pm	10 pm	11 pm	12 am	1 am	2 am		3 am	4 am	5 am	6 am	7 am	8 am	9 am	10 am	11 am	

Sleep/Wake Hygiene Measures for Shift Work Disorder



Create a pleasant and relaxing environment that is conducive to sleep
 - Turn off TV, radio, telephone
 - Use ear plugs



Minimize noise, light, and extreme temperatures in bedroom*



Use light during wake times and dark during sleep times



Avoid caffeine, nicotine,* other stimulants, and alcohol* too close to bedtime



Avoid large meals close to bedtime*



Allocate adequate time for sleeping



Avoid stressful or stimulating activities close to bedtime



Get regular exercise but not within several hours of going to sleep

Sleep/wake hygiene measures are simple, nonpharmacologic ways to improve your sleep.

*National Center on Sleep Disorders Research and Office of Prevention, Education, and Control. National Institutes of Health. National Heart, Lung, and Blood Institute Working Group on Insomnia. Insomnia. Assessment and management in primary care. 2000.

Treatment Options for Shift Work Disorder

Ask your clinician about which treatments are best for you.

For Insomnia¹ – to increase sleep duration

- Sleep/wake hygiene behaviors
- Hypnotic medication
 - Benzodiazepines, other benzodiazepine receptor agonists
 - Triazolam
 - Temazepam
- Melatonin (not FDA approved)

For Awake-Time Sleepiness – to increase alertness

- Naps²
- Caffeine³
- Armodafinil⁴/Modafinil⁵ (only FDA-approved agents)

For Circadian Rhythm Misalignment^{1,6} – to increase sleep duration and alertness

- Bright light during work
- Melatonin (bedtime during the day)
- Avoid morning bright light (bedtime during the day)

1. Morgenthaler TI, et al. *Sleep*. 2007;30:1445-1459.

2. Smith-Coggins R, et al. *Ann Emerg Med*. 2006;48:596-604.

3. Wyatt JK, et al. *Sleep*. 2004;2(3):374-381.

4. Czeisler CA, et al. *Mayo Clin Proc*. 2009;84(11):958-972.

5. Czeisler CA, et al. *N Engl J Med*. 2005;353:476-486.

6. Smith MR, et al. *Sleep*. 2009;32:1481-1489.

Bright Light Therapy for Shift Work Disorder

- Use bright lights (artificial lights) at work and during awake hours to help combat drowsiness and improve alertness
- Use bright lights from early in night shift through 2 hours before shift ends



- Wear sunglasses:
 - During your commute home in the morning after night shift
 - 1-2 hours before daylight bedtime
- Minimize light exposure prior to bedtime
- Avoid light during sleep hours
- Darken bedroom at home
 - Use light-blocking curtains or blinds
 - Dim lights in the bedroom, bathroom, and passage in between

Ask your clinician whether using a light box is right for you.

1. Morgenthaler TI, et al. *Sleep*. 2007;30:1445-1459.

2. Smith MR, et al. *Sleep*. 2009;32:1481-1489.

Planned Napping

Take naps:

- 20 minutes to one hour long
- Prior to night shift

Improvements seen with napping:

- Improved reaction times
- Increased alertness
- Fewer accidents
- Improved performance



Generally does not adversely affect daytime sleep

Sack RL, et al. *Sleep*. 2007;30:1460-1483.
Dinges DF, et al. *Sleep*. 1997;20:267-277.

Rosekind MR, et al. *Behav Med*. 1996;21:166-170.
Frey R, et al. *Crit Care Med*. 2002;30:2322-2329.

Caffeine

Strategic consumption is key to temporarily relieve sleepiness

Use frequent small doses during your shift

- Low-dose caffeine (0.3 mg/kg) every hour during extended wakefulness improves performance
- This equals roughly one-third of a cup of coffee or less per hour for a 155-lb (70-kg) person



Effects seen within 15 to 30 minutes

Wyatt JK, et al. *Sleep*. 2004;27:374-381.

The Dangers of Drowsy Driving

Getting less than 4 hours of sleep has an effect similar to that of legal intoxication.¹

Shift workers are:

- More likely to drive while drowsy as compared to the rest of the population, putting them at high risk for a collision²
- Significantly more likely to fall asleep at the wheel³

1. Roehrs T, Burduvali E, Bonahoom A, et al. Ethanol and sleep loss: a "dose" comparison of impairing effects. *Sleep*. 2003;26:981-985.
2. National Center on Sleep Disorder Research and the National Highway Traffic Safety Administration. *Drowsy Driving and Automobile Crashes*. National Highway Traffic Safety Administration Website. [http://www.nhtsa.gov/people/injury/drowsy_driving1/drowsy.html#Figure 3](http://www.nhtsa.gov/people/injury/drowsy_driving1/drowsy.html#Figure%203). Accessed August 1, 2011.
3. Barger LK, Cade BE, Ayas NT, et al. Extended work shifts and the risk of motor vehicle crashes among interns. *N Engl J Med*. 2005;352(2):125-134.

Drowsy Driving Tips

- Get adequate sleep (7 to 9 hours) before you hit the road
- Do not be too rushed to arrive at your destination
- For long drives, take a break every 100 miles or 2 hours: get a snack, switch drivers, or go for a run
- Take a nap—find a safe place to take a 15- to 20-minute nap, if you think you might fall asleep
- Avoid alcohol and medications that cause drowsiness as a side effect
- Consume caffeine—the equivalent of 2 cups of coffee can increase alertness for several hours
- Recognize signs of fatigue: drifting from your lane, hitting rumble strips, repeated yawning, difficulty focusing, tailgating, or missing road signs

Adapted from National Sleep Foundation's Countermeasures to Prevent Fall-Asleep Crashes.

RESOURCES

Articles

Griffen RM. The health risks of shift work.

<http://www.webmd.com/sleep-disorders/excessive-sleepiness-10/shift-work>.

Kam K. Sleep and the night shift: Could you have shift work sleep disorder?

<http://www.webmd.com/sleep-disorders/excessive-sleepiness-10/night-shift-sleep>.

Los Angeles Times. Sleep deprived pay the price for shift work.

<http://www.latimes.com/features/health/mentalhealth/la-he-sleep24-2008mar24,0,1684543.story?page=2>.

The New York Times. Working Nights, Sleeping Poorly.

<http://consults.blogs.nytimes.com/2010/08/13/when-work-hours-disrupt-sleep/?scp=4&sq=treating%20sleep%20disorder&st=cse>.

Zamora D. Sleep deprivation at the workplace.

<http://www.webmd.com/sleep-disorders/guide/sleep-deprivation-workplace>.

Books

Avidan AY, Zee PC. *Handbook of Sleep Medicine*. 2nd ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2011.

Dement WC. *The Promise of Sleep: A Pioneer in Sleep Medicine Explores the Vital Connection Between Health, Happiness, and a Good Night's Sleep*. New York, NY: Dell Publishing; 2000.

Foldvary-Schaefer N. *The Cleveland Clinic Guide to Sleep Disorders*. New York, NY: Kaplan Publishing; 2009.

Books (cont'd)

Hirshkowitz M, Smith PB. *Sleep Disorders for Dummies*. Hoboken, NJ: Wiley Publishing; 2004.

Schenck CH. *Sleep: A Groundbreaking Guide to the Mysteries, the Problems, and the Solutions*. New York, NY: Avery Trade (Penguin Group); 2008.

Web Sites

American Academy of Sleep Medicine www.aasmnet.org

Better Sleep Better Life <http://www.better-sleep-better-life.com/>

Circadian 24/7 Workforce Solutions http://www.circadian.com/index.cfm?redirect_yes

Drowsy Driving <http://drowsydriving.org>

HealthiNation. Shift Work Sleep Disorder. <http://www.healthination.com/Videos/Shift-Work-Sleep-Disorder>

Helpguide.org: Sleep Disorders and Sleeping Problems: Symptoms, Treatment, and Help for Common Sleep Disorders http://www.helpguide.org/life/sleep_disorders.htm

National Heart, Lung and Blood Institute, Diseases and Conditions Index: What is Insomnia? www.nhlbi.nih.gov/health/dci/Diseases/inso/inso_what.html

National Institutes of Health, National Center on Sleep Disorders Research (materials for clinician and patient) www.nhlbi.nih.gov/about/ncsdr/index.htm

National Sleep Foundation www.sleepfoundation.org

Talk About Sleep www.talkaboutsleeeep.com

Be Alert for Signs You May Have Shift Work Disorder

- Insomnia or tiredness/sleepiness
- Poor concentration
- Impaired work performance
- Headache
- Irritability or depressed mood
- Motor vehicle accidents/near-misses
- Falls, injuries at work

Ask your clinician about steps you can take to improve your symptoms of excessive sleepiness and/or insomnia.

**Improve your quality of life.
Manage your Shift Work Disorder.**