Primary Care Approaches to Shift Work Disorder
Burden of Illness and Rationale for Therapeutic Intervention

Date: September 19, 2012
Location: Donald E. Stephens Convention Center—Rosemont, Illinois

Education Partner: Asante Communications, LLC
Session 2: Primary Care Approaches to Shift Work Disorder: Burden of Illness and Rationale for Therapeutic Intervention

Learning Objectives

1. Describe the pathophysiologic basis of circadian rhythm misalignment and its relationship to sleep/wake and light/dark cycles, cardiometabolic function, mood/cognition, activities of daily living, and overall health.
2. Assess the consequences of circadian misalignment on sleep/wake timing, physiology, performance, and behavior.
3. Identify and differentially diagnose shift work disorder (SWD) based on symptomatology, patient history, and findings obtained from a thorough sleep history, sleep diaries/logs, and other assessment tools.
4. Formulate initial and ongoing treatment plans for SWD that incorporate evidence-based nonpharmacologic and pharmacologic modalities.
5. Improve ongoing management of patients with SWD by monitoring treatment responsiveness and establishing appropriate referral pathways to ensure continuity of care.

Faculty

Paul P. Doghramji, MD, FAAFP
Brookside Family Practice & Pediatrics
Pottstown, Pennsylvania

Dr. Doghramji is cofounder of Brookside Family Practice & Pediatrics, a current affiliate of Pottstown Medical Specialists in Pottstown, Pennsylvania. He has also been attending physician in family practice, chair of the utilization management committee, and physician advisor at Pottstown Memorial Medical Center. Most recently, he has moved his practice location to Collegeville Family Practice in Collegeville, Pennsylvania.

Dr. Doghramji received his medical degree from Jefferson Medical College in Philadelphia and completed his residency in family practice at Chestnut Hill Hospital, also in Philadelphia. He is a fellow of the American Academy of Family Physicians and a member of the National Headache Foundation and Chronic Fatigue and Immune Dysfunction Syndrome Association. He was certified by the American Board of Family Practice in 1985, and has been recertified every six years since then. Dr. Doghramji is also medical director for health services at Ursinus College in Collegeville and assistant medical director for health services at the Hill School in Pottstown.

Dr. Doghramji has been a recipient of the American Medical Association Physician Recognition Award in all qualifying years since leaving residency. He has published and lectured and has been a patient education specialist on various topics in family practice, especially insomnia, fatigue, and sleep disorders.

Thomas Roth, PhD
Clinical Professor of Psychiatry
University of Michigan School of Medicine
Ann Arbor
Director, Sleep Disorders and Research Center
Henry Ford Hospital
Detroit, Michigan

Dr. Roth is director of the Sleep Disorders and Research Center at Henry Ford Health System in Detroit, Michigan. In addition to his position at Henry Ford, he is a clinical professor of psychiatry at the University of Michigan School of Medicine in Ann Arbor.

Dr. Roth’s research primarily focuses on sleep processes. His work includes research on sleep loss, sleep fragmentation, and deviation from sleep processes, including pharmacologic effects and sleep pathologies.

Dr. Roth has held numerous leadership positions within his field. He is past chairman of the National Center on Sleep Disorders Research Advisory Board at the National Institutes of Health and past president of the United States Sleep Research Society, the American Sleep Disorders Association, and the National Sleep Foundation. He also served as editor-in-chief of the journal Sleep.
Dr. Roth received his doctorate degree from the University of Cincinnati in 1970. He has published more than 310 manuscripts, 12 edited volumes, 150 chapters, and 450 abstracts.

**Faculty Financial Disclosure Statements**
The presenting faculty reports the following:

Paul P. Doghramji, MD, serves on the advisory board and speakers’ bureau for Purdue Pharma L.P. He is on the advisory board for UCB S.A. and is a member of the speakers’ bureau for Teva Pharmaceutical Industries Ltd. and URL Pharma, Inc.

Thomas Roth, PhD, is a consultant for Abbott Laboratories; Acadia Pharmaceuticals; Acologix, Inc.; Acorda Therapeutics, Inc.; Actelion Ltd.; Addrenex Pharmaceuticals, Inc.; Alchemers; Alza; Angel Pharmaceuticals, Inc.; Arena Pharmaceuticals, Inc.; AstraZeneca; Aver Pharmaceuticals; Bayer; Bristol-Myers Squibb Pharmaceuticals Ltd; BTG; Cypress Pharmaceutical, Inc.; Dove; Eisai; Eli Lilly and Company; Evotec; Forest; Hypnion; Impax; Intec Pharma Ltd.; Intra-Cellular Therapies; Jazz Pharmaceuticals, Inc.; Johnson & Johnson; King Pharmaceuticals Inc.; Lundbeck; McNeil; MediciNova; Neurim Pharmaceuticals Ltd.; Neurogen Corp.; Novartis; Orexo; Organon Pharmaceuticals USA Inc.; Otsuka Pharmaceutical Company, Ltd.; Prestwick Pharmaceuticals, Inc.; Proctor & Gamble; Resteva; Roche/Genentech; Servier; Shire; Vivometrics; and Yanda. He receives grant/research support from Aventis, and is consultant for and receives grant/research support from Merck; Neurocrine Biosciences, Inc.; Pfizer Inc.; Schering-Plough; Syres; Takeda; TransOoral; Wyeth; XenoPort; and Yamanouchi Pharmaceutical Co., Ltd. He is a consultant and serves on the speakers bureau for GlaxoSmithKline and Purdue Pharma L.P. Dr. Roth is a consultant, speakers’ bureau member and receives grant/research support from Cephalon Inc., sanofi-aventis, and Sepracor Inc.

**Education Partner Financial Disclosure Statement**
The content collaborators at Asante Communications, LLC, report the following:

Chris Ontiveros, PhD, has no financial relationships to disclose.

**Suggested Reading List**

Culpepper L. The social and economic burden of shift work. *J Fam Pract.* 2010;59(1 suppl):S3-S11.


Primary Care Approaches to Shift Work Disorder

Burden of Illness and Rationale for Therapeutic Intervention

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1. Describe the pathophysiologic basis of circadian rhythm misalignment and its relationship to sleep/wake and light/dark cycles, cardiometabolic function, mood/cognition, activities of daily living, and overall health
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Pre-Activity Evaluation

Obtaining a thorough sleep history and sleep log is usually sufficient to diagnose shift work disorder.
1. Strong disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

Pre-Activity Evaluation

Shift work disorder is characterized by excessive sleepiness and insomnia.
1. Strong disagree
2. Disagree
3. Agree
4. Strongly agree

Pre-Activity Evaluation

The majority of shift workers have shift work disorder.
1. Strong disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

Pre-Activity Evaluation

Behavioral and pharmacologic treatment options are available to treat shift work disorder.
1. Strong disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree
Pre-Activity Evaluation

Evening bright light is an appropriate therapy for night shift workers who complain of poor mood and sleepiness at work.

1. Strong disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

Shift Work Disorder
Sleep/Wake Misalignment Matters

Thomas Roth, PhD
Clinical Professor of Psychiatry
University of Michigan School of Medicine
Ann Arbor, Michigan
Director, Sleep Disorders and Research Center
Henry Ford Hospital
Detroit, Michigan

Circadian Rhythms
Early Observations

Jean-Jacques de Mairan, 1729.

Circadian Rhythms
Daily Physiologic and Behavioral Patterns


Circadian Rhythm Hierarchy
Entrainment of the SCN and Peripheral Clocks


Circadian Rhythms in Human Function


Deviation From Mean

Subjective Alertness

Short-term Memory

Core Body Temperature

Melatonin

Insulin

Median Systolic BP

Plasma Leptin

CTP

Peripheral clocks

Temperature 
Food

Insulin

Plasma Leptin

CTP
Two-Process Model of Sleep

Circadian Alerting Signal

Alerting signal

Time of Day

Sleep

7 23 7 23 7 23 7


Circadian Dyssynchrony

- Sleep/wake cycle perturbed when misaligned with environmental cues
- Types
  - Normal endogenous circadian rhythms are misaligned with conventional or socially acceptable sleep/wake times (e.g., SWD, JLD)
  - Abnormal endogenous circadian rhythm changes relative to expected sleep/wake times (e.g., ASPD, DSPD)

ASPD, advanced sleep phase disorder; DSPD, delayed sleep phase disorder; JLD, jet lag disorder; SWD, shift work disorder. American Academy of Sleep Medicine. International Classification of Sleep Disorders, 2nd ed. 2005.

Cognitive Impairment

- Attention
  - Reduced ability to concentrate and continue performing
  - Difficulties sustaining attention and alertness
- Memory
  - Decreased working memory capacity
  - Reduced memory of facts
  - Reduced recall of events or episodes
- Executive function
  - Reduced ability to multitask
  - Reduced decision making
  - Reduced creativity and productivity


Circadian Misalignment

Cognitive and Performance Deficits

Sleep Restriction and Circadian Disruption

Adverse Metabolic Effects

ADD, mathematical addition test; DSST, digit symbol substitution test; PVT, psychomotor vigilance test; RT, reaction time.


Circadian Misalignment
Dysynchrony and Morbidity

- Muscle
- Brain
- Adipose
- Kidney
- Liver
- Pancreas
- Breast
- Electrolyte imbalance
- Heart
- Gastrointestinal Tract
- Insulin resistance
- Insulin
- Liver
- Muscle
- Nervous system
- Respiratory
- Skin
- Sleep
- Stomach

CRSD, circadian rhythm sleep disorder

Shift Work Types

<table>
<thead>
<tr>
<th>Shift Type</th>
<th>Work Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evening</td>
<td>Between 2 PM and midnight</td>
</tr>
<tr>
<td>Day</td>
<td>Between 4 AM and 7 PM</td>
</tr>
<tr>
<td>Night</td>
<td>Between 9 PM and 8 AM</td>
</tr>
<tr>
<td>Rotating</td>
<td>Periodic time changes among days, evenings, nights</td>
</tr>
<tr>
<td>Split</td>
<td>Two distinct work periods/day</td>
</tr>
<tr>
<td>Irregular</td>
<td>Varying times by employer</td>
</tr>
</tbody>
</table>

Comorbidities Significantly Associated With Shift Work

- Cancer
- Gastrointestinal problems
- Cardiometabolic dysfunction
- Reproductive abnormalities
- Mood and anxiety disorders
- Sleep disorders

Shift Work Disorder

Diagnostic Criteria

- Complaint of insomnia or ES that is temporally associated with a recurring work schedule that overlaps the usual time for sleep
- Symptoms are associated with the shift-work schedule over the course of at least 1 month
- Sleep log or actigraphy monitoring (with sleep diaries) for at least 7 days demonstrates sleep-time misalignment and disturbed circadian rhythms
- Sleep disturbance is not better explained by another current sleep disorder, medical or neurological disorder, mental disorder, medication use, or substance use disorder

ARS Question

Have you ever officially diagnosed any of your patients with shift work disorder?
1. Yes
2. No

Shift Work Disorder
Prevalence in Night and Rotating Shift Workers

Night Workers
- +SWD 52.1%
- -SWD 47.9%
Rotating Workers
- +SWD 71.9%
- -SWD 28.1%

There are approximately 21 million shift workers in the United States

Shift Work Disorder Adversely Affects Biopsychosocial Parameters

Prevalence of Depression, %

Prevalence of Ulcers, %

Prevalence of Missed Family/Social Activities, %

* * * * *

Eric
Recent ED Visit

- MVA while driving early morning bakery delivery truck
- Reports occasionally “spacing out or dozing off” while driving during work
- Presents with minor scrapes and bruises on arms; injuries unremarkable otherwise
- Patient discharged and told to follow up with PCP

ED, emergency department; MVA, motor vehicle accident; PCP, primary care physician.

Eric
PCP Visit

- Working past 2 months as night baker/morning bakery delivery driver after his position at local grocery store was eliminated and he could not find employment for 3 months
- Concerns about
  - Possible job loss after recent MVA and financially supporting his wife and 2 teenage daughters
  - Frequent forgetfulness, concentration lapses, tiredness, fatigue, and unreported near-miss accidents at work
Eric
Presentation to PCP

**Medical History and Medications**
- Type 2 diabetes, diagnosed 7 years ago
  - Metformin ER 1000 mg daily (Biguanide)
  - Pioglitazone 30 mg daily (Thiazolidinedione)
- Hypertension, diagnosed 3 years ago
  - Lisinopril/hydrochlorothiazide 20/35 mg daily (ACE inhibitor/Thiazide)
  - Simvastatin 40 mg daily (Statin)

**Laboratory**
- Serum triglycerides: 180 mg/dL
- HDL: 46 mg/dL; LDL: 120 mg/dL
- Creatinine: 0.7 mg/dL
- Gamma GT: normal (35 U/L)
- Serum HbA1c: 7.6%
- Chem-12: normal

**Personal History**
- 47 years old, married with 2 teenage daughters
- Baker and bakery van driver, Monday to Friday, 11 AM to 7 PM

**Physical Examination**
- Height: 5’11”
- Weight: 266 lb
- BMI: 35.1 (Obese)
- Neck circumference: 15.5 inches

**Vital Signs**
- Afebrile
- BP: 145/95 mm Hg
- HR: 87 beats/min
- RR: 19 breaths/min

**Recognizing Sleep Problems**
- Screen patients with the following questions
  - How is your sleep?
  - Do you have trouble getting to sleep or staying asleep?
  - Do you get drowsy during the day or at inappropriate times?
- Review medical history and physical exam for
  - Possible coexisting psychiatric and medical illnesses that put patients at higher risk for insomnia
  - Prescription and nonprescription medications
  - Environmental factors that contribute to insomnia
  - Interview bed partner

**Shift Work Disorder**
**Characterizing Sleep/Wake Problems**
- Sleep History (eg, patient interview)
- Questionnaires (eg, ESS)
- Sleep Diary/Log
- Actigraphy
- Circadian Phase Markers (eg, CBTmin, DLMO)

**ARS Question**
How often do you CURRENTLY obtain a sleep history?
1. Always
2. Most of the time
3. Sometimes
4. Never

**ARS Question**
How often do you ever ask your patients what shift they work?
1. Always
2. Most of the time
3. Sometimes
4. Never

**ARS Question**
How often do you ever ask your patients what shift they work?
1. Always
2. Most of the time
3. Sometimes
4. Never
Epworth Sleepiness Scale

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

<table>
<thead>
<tr>
<th>Situation</th>
<th>Chance of Dozing Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sitting and reading</td>
<td>2</td>
</tr>
<tr>
<td>Watching TV</td>
<td>2</td>
</tr>
<tr>
<td>Sitting inactive in a public place (eg, in a theater or at a meeting)</td>
<td>2</td>
</tr>
<tr>
<td>As a passenger in a car for an hour without a break</td>
<td>3</td>
</tr>
<tr>
<td>Lying down to rest in the afternoon when circumstances permit</td>
<td>2</td>
</tr>
<tr>
<td>Sitting and talking to someone</td>
<td>1</td>
</tr>
<tr>
<td>Sitting quietly after a lunch without alcohol</td>
<td>1</td>
</tr>
<tr>
<td>In a car while stopped for a few minutes in traffic</td>
<td>1</td>
</tr>
<tr>
<td><em><em>Total ESS</em> score</em>*</td>
<td><strong>14</strong></td>
</tr>
</tbody>
</table>

*ESS score <10 = normal; 10-12 mild sleepiness; 13-15 moderate sleepiness; ≥16 = severe sleepiness.


Eric—Shift Work Disorder

Sleep/Wake Schedule

**Monday-Friday**
- 3:30 PM Wake to alarm
- 4:00 PM Pick up daughters from school and wife from work
- 6:00 PM Eat dinner with family
- 7:00 PM Family time
- 10:00 PM Get ready for work
- 10:30 PM Leave for work
- 11:00 PM Begin work
- 7:30 AM End work, drive home
- 7:45 AM Arrive home, eat light breakfast
- 8:15 AM Drop off daughters at school and wife at work
- 9:30 AM Go to bed

**Saturday and Sunday**
- 8:30 AM Wake without alarm
- 11:00 PM Go to bed

Eric—Shift Work Disorder

Sleep Evaluation

- Time in bed
  - 6 h/d on workdays
  - 9h 30 min/d on non-workdays
- Takes caffeine pills (400 mg nightly) at work to combat drowsiness
  - Pills are no longer helping
- Falls asleep quickly
  - Difficulty staying asleep
  - Outside noise
- Denies snoring

Symptoms and Differential Diagnosis of Shift Work Disorder

- ES and insomnia are the defining symptoms and can result in
  - Fatigue
  - Difficulty concentrating
  - Reduced work performance
  - Headache
  - Irritability or depressed mood
  - Unrefreshed sleep
- Overlapping symptomatology with
  - Other sleep/wake disorders
    - OSA and RLS commonly reported in shift workers
    - Sleep deprivation
    - Mood disorders
    - Brain injury
    - Sedative/stimulant use or abuse

OSA, obstructive sleep apnea; RLS, restless legs syndrome.


Initial and Ongoing Treatment

Reducing Symptoms and Realigning Rhythms

Paul P. Doghramji, MD
Family Physician
Collegeville Family Practice
Medical Director of Health Services
Ursinus College
Collegeville, Pennsylvania
Shift Work Disorder

Treatment Goals

• Increase nighttime alertness
• Reduce daytime insomnia
• Align circadian rhythms


Behavioral SWD Management

Good Sleep Hygiene Promotes Better Sleep

<table>
<thead>
<tr>
<th>Step</th>
<th>Practical Advice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep sleep room dark, especially if used during daylight</td>
<td>Ensure room has sufficient well-lined curtains</td>
</tr>
<tr>
<td>Ensure a consistent bedroom temperature</td>
<td>Aim for a temperature of around 68°F (20°C)</td>
</tr>
<tr>
<td>Reduce noise</td>
<td>Avoid wearing too many clothes to bed</td>
</tr>
<tr>
<td>Use a room at the rear of the house if near a busy road</td>
<td>Avoid watching television or listening to loud music immediately before the required sleep period</td>
</tr>
<tr>
<td>Consider earplugs if the ambient noise is intrusive</td>
<td>Schedule meals so that the main meal of the day is eaten during or before the work period</td>
</tr>
<tr>
<td>Put telephones on the answering machine</td>
<td>Consider having a warm, milky drink before the required sleep period</td>
</tr>
</tbody>
</table>

AASM Shift Work Disorder Treatment Recommendations

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned sleep schedules</td>
<td>Standard</td>
</tr>
<tr>
<td>Timed light exposure</td>
<td>Guideline</td>
</tr>
<tr>
<td>Timed melatonin administration</td>
<td>Guideline</td>
</tr>
<tr>
<td>Hypnotics</td>
<td>Guideline</td>
</tr>
<tr>
<td>Alerting agents</td>
<td>Guideline</td>
</tr>
<tr>
<td>Caffeine</td>
<td>Option</td>
</tr>
</tbody>
</table>

AASM, American Academy of Sleep Medicine.

Behavioral SWD Management

Optimizing Alertness

- Adequate sleep time
- Appropriately timed light
- Scheduled naps

*Light also has circadian phase-shifting properties and may be prescribed to reduce circadian misalignment.

ARS Question

Which treatment approach would you take for a SWD patient with complaints of ES and insomnia?
1. First treat sleepiness then insomnia
2. First treat insomnia then sleepiness
3. Treat sleepiness and insomnia simultaneously

AASM, American Academy of Sleep Medicine.

Appropriately Timed Light Phase Shifts Circadian Rhythms

<table>
<thead>
<tr>
<th>Phase Shift</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance</td>
<td>Delay</td>
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</tbody>
</table>

### Bright Light Pulses in Simulated Shift Work

**Improvement With Partial Re-entrainment**

**Mood disturbance**

<table>
<thead>
<tr>
<th>Time</th>
<th>N=6</th>
<th>N=14</th>
<th>N=18</th>
</tr>
</thead>
<tbody>
<tr>
<td>02:30</td>
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<td>0</td>
</tr>
<tr>
<td>04:30</td>
<td>5</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>06:30</td>
<td>10</td>
<td>12</td>
<td>12</td>
</tr>
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**Mental fatigue**

<table>
<thead>
<tr>
<th>Time</th>
<th>N=6</th>
<th>N=14</th>
<th>N=18</th>
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<tbody>
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<tr>
<td>04:30</td>
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<td>9</td>
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</tr>
<tr>
<td>06:30</td>
<td>10</td>
<td>12</td>
<td>12</td>
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</table>

**Performance**

<table>
<thead>
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<th>Time</th>
<th>N=6</th>
<th>N=14</th>
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<tbody>
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<tr>
<td>04:30</td>
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<td>9</td>
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</tr>
<tr>
<td>06:30</td>
<td>10</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

*P<0.01 not re-entrained vs completely re-entrained; P<0.05 not re-entrained vs completely re-entrained; PNS-P= profile of mood states; RT-reaction time.

Schweitzer PK, et al.

**PROM, profile of mood states; RT, reaction time.**

**Number of Lapses**

- Naps + Caffeine (n=17)
- Placebo (n=16)

**Caffeine**

- Alertness
- Unscheduled

**Melatonin**

- Sleep onset & maintenance
- Diminished efficacy in night-shift simulation and/or field experiments

**Prescription Pharmacotherapy**

**AASM Recommendations for SWD**

<table>
<thead>
<tr>
<th>Agent</th>
<th>Use</th>
<th>Clinical insights</th>
<th>Adverse events</th>
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<tbody>
<tr>
<td><strong>Hypnotics</strong></td>
<td></td>
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<tr>
<td><strong>Methylphenidate</strong></td>
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<tr>
<td><strong>Modafinil</strong></td>
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<tr>
<td><strong>Armodafinil</strong></td>
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<tr>
<td><strong>Benzodiazepines</strong></td>
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<td><strong>Zolpidem</strong></td>
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<td><strong>Zopiclone</strong></td>
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<tr>
<td><strong>Triazolam</strong></td>
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<tr>
<td><strong>Temazepam</strong></td>
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<td></td>
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</tr>
<tr>
<td><strong>Insomnia</strong></td>
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<tr>
<td><strong>Circadian</strong></td>
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<tr>
<td><strong>Melatonin</strong></td>
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</tbody>
</table>

**Melatonin**

**Timing Is Key**

**Approximate Clock Time**

<table>
<thead>
<tr>
<th>Circadian Time</th>
<th>00:00</th>
<th>02:00</th>
<th>04:00</th>
<th>06:00</th>
<th>08:00</th>
<th>10:00</th>
<th>12:00</th>
<th>14:00</th>
<th>16:00</th>
<th>18:00</th>
<th>20:00</th>
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<tbody>
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<td>2</td>
<td>3</td>
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<tr>
<td>Alertness</td>
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<td>3</td>
<td>4</td>
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</tbody>
</table>

**Schweitzer PK, et al.**

OTC, over-the-counter; GL, gastrointestinal; OTC Pharmacotherapy; AASM Recommendations for SWD.
**Melatonin**

*Phase Resetting and Hypnotic Effects in Simulated Night Shift Work*

- **Morning melatonin phase advances**
- **Morning melatonin increases total sleep time**

**Hypnotics in Shift Workers**

*Improved Sleep and Next-Day Cognition*

- **Total Sleep Time, min**
- **Rating, 100-mm VAS**

**Modafinil in Simulated Night Shift Work**

*Improved Cognitive Performance*

- **DAT: False Alarms**
- **Digital Recall: Immediate**

**Armodafinil and Modafinil in Shift Work**

*Reduced Sleepiness and Improved Mood*

- **Sleepiness**
- **Mood**

**Armodafinil in Shift Work Disorder**

*Reduced Sleepiness and Illness Severity*

- **Sleepiness**
- **CGI-C Improvement**

**Eric—Shift Work Disorder**

*Treatment*

- **AASM Recommendations**
  - **Therapy**
  - **Recommendation**

  - Planned sleep schedule: Standard
  - Timed light exposure: Guideline
  - Tiredness medication administration: Guideline
  - Hypnosis: Guideline
  - Alerting agents: Guideline
  - Caffeine: Optimal

- **Standard** = high degree of clinical certainty; **Guideline** = moderate degree of clinical certainty; **Optimal** = uncertain clinical usefulness.
**Eric—Shift Work Disorder**

**Sleep Log**

Please indicate the time you went to bed with the letter “x”.

<table>
<thead>
<tr>
<th>Date</th>
<th>9 PM</th>
<th>10 PM</th>
<th>11 PM</th>
<th>12 AM</th>
<th>1 AM</th>
<th>2 AM</th>
<th>3 AM</th>
<th>4 AM</th>
<th>5 AM</th>
<th>6 AM</th>
<th>7 AM</th>
<th>8 AM</th>
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<tbody>
<tr>
<td>Mon</td>
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</tbody>
</table>

When to Consider a Sleep Consultation and/or Referral

- Chronic sleep/wake complaints cannot be explained or remedied fully
- Suspicion of narcolepsy and OSA
- Unusual behaviors during sleep, with or without sleepiness

Collaborative and continuous care of patients optimizes outcomes


**Conclusions**

- Shift work is associated with serious medical and psychiatric conditions, such as SWD, mood disorders, and cardiometabolic abnormalities
- ES, insomnia, and mood and performance impairments can be used as surrogate markers to identify shift work disorder
- SWD can often be sufficiently diagnosed by obtaining an initial and longitudinal sleep history
- Pharmacologic and/or nonpharmacologic approaches can align circadian rhythms and reduce symptoms in patients with SWD

**ARS Question**

Which approach would you most likely take if a sleep study referral found that your SWD patient had obstructive sleep apnea (OSA)?

1. First treat the OSA, then the SWD
2. First treat the SWD, then the OSA
3. Treat both simultaneously

**Post-Activity Evaluation**

Obtaining a thorough sleep history and sleep log is usually sufficient to diagnose shift work disorder.

1. Strong disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree
Post-Activity Evaluation

Shift work disorder is characterized by excessive sleepiness and insomnia.
1. Strong disagree
2. Disagree
3. Agree
4. Strongly agree

Post-Activity Evaluation

The majority of shift workers have shift work disorder.
1. Strong disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

Post-Activity Evaluation

Behavioral and pharmacologic treatment options are available to treat shift work disorder.
1. Strong disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

Post-Activity Evaluation

Evening bright light is an appropriate therapy for night shift workers who complain of poor mood and sleepiness at work
1. Strong disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

Questions & Answers