

CIRCADIAN DISORDERS

WHAT ARE CIRCADIAN RHYTHM SLEEP WAKE DISORDERS?

People with a circadian rhythm sleep wake disorder (CRSWD) have difficulty sleeping and being awake at normal times of night and day. Generally, people sleep at night and feel alert during the day, in time with the daily 24-hour cycle of sunlight and darkness (also called the body's circadian rhythm or body clock). In some people sleep gets out of sync with conventional times because of genetic differences, changes in habits or timezones, or exposure to light at unusual times, leading to CRSWDs. It is uncertain how many people have a CRSWD, with some estimates ranging from 3% to 16%.

WHAT ARE THE SYMPTOMS OF CIRCADIAN RHYTHM SLEEP WAKE DISORDERS?

- **Delayed sleep-wake phase:**

- A pattern of falling asleep and waking up hours later than is typical (extreme "night owl")
- Difficulty falling asleep in the evening and waking up in the morning
- If sleeping at preferred times, sleep is normal

- **Advanced sleep-wake phase:**

- A pattern of falling asleep and waking up earlier hours than is typical (extreme "early bird")
- Feeling sleepy or falling asleep in the late afternoon or early evening
- Waking up alert early in the morning and not being able to go back to sleep
- If sleeping at preferred times, sleep is normal

- **Non-24 sleep-wake rhythm:**

- If left to sleep naturally, bedtime and wake time drift later each day
- Sleep times that seem to jump around, because over several weeks the sleep period will drift in and out of sync with other people, progressing from night to morning, to afternoon, to night, and so on.
- Most common in people who are blind, but can also affect sighted people

- **Irregular sleep-wake rhythm:**

- No regular pattern to the timing of sleep and wakefulness
- Sleep is broken into 3 or more naps across a 24-hour period

- **Shift work disorder:**

- Difficulty adjusting to shift work schedules, leading to health issues and social challenges

- **Jet lag:**

- Temporary difficulty adjusting to rapid travel across more than 2 time zones
- For people who travel often, jet lag may become chronic and benefit from specialist treatment

MANY PEOPLE LIVING WITH A CRSWD EXPERIENCE WORK, RELATIONSHIP, AND MENTAL HEALTH CHALLENGES.

Some symptoms are common across CRSWDs:

- People with CRSWDs may experience sleep deprivation, especially if trying to maintain socially conventional sleep schedules. This can lead to symptoms when they are awake including fatigue, sleepiness, difficulty concentrating, headaches, nausea, and moodiness.
- They may use substances to fall asleep (eg alcohol or sleeping pills) and stay awake (eg. coffee or stimulants) at societally normal times, that can make their sleep worse.
- CRSWDs can be misinterpreted as signs of insomnia or depression.
- CRSWDs can make it difficult to maintain relationships and meet work, school and social responsibilities.

HOW ARE CIRCADIAN RHYTHM SLEEP WAKE DISORDERS DIAGNOSED?

Seeing a **sleep specialist** is recommended for people who are experiencing health problems or challenges in work, school, or social life related to their sleep timing. The sleep specialist will ask patients about their symptoms and sleep and do a medical and neurological exam.

- They may ask people to track their sleep and wake patterns for several days or weeks by keeping a **sleep diary** and/or wearing an **actigraph** (a medical device that looks like a smartwatch).
- A **sleep study** (also called polysomnography) is not required to diagnose CRSWDs but may be done to check for other sleep disorders. Stick-on sensors measure breathing, heart rate, brain activity, and body movements while asleep. The study can be done during an overnight stay **in a sleep center/lab** or **at home**. Home testing collects less information but may be more convenient for straightforward cases.

HOW ARE CIRCADIAN RHYTHM SLEEP WAKE DISORDERS TREATED?

The best choice of treatments for each person depends on the type and cause of CRSWD. They all revolve around getting sleep timing more in sync with society and the environment.

- For some people, **adapting lifestyle** to fit work/school/social schedules around their preferred sleep schedule is enough to resolve their CRSWD-related issues (e.g. evening hobbies and working late shifts for people with DSPD). Others may need additional treatments.
- **Treating other health conditions**, including sleep disorders, that could be contributing to symptoms.
- **Behavioral therapies**, including education, counseling, and cognitive behavioral therapy, can help with keeping healthy sleep habits and training the brain and body to sleep on a regular schedule.
- **Social support**, through connecting with other people who have a CRSWD and their families, can empower people to learn helpful strategies for living well.
- For sighted people and certain types of blindness, carefully timed **bright light therapy** can help to adjust and maintain sleep-wake timing. Scheduling other behaviors such as eating and exercise can also help.
- **Melatonin** supplements and medications that affect melatonin receptors can help to adjust sleep timing if used at appropriate doses and times.