

# Cognitive behavioral therapy for better sleep

February 25 2014, by Sathya Achia Abraham

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As the sun sets and day turns to night, we find ourselves growing weary, worn out from a busy day. We follow a ritual that leads us down the path to a restful slumber. We power down with perhaps a warm bath, brush our teeth, pull on the pajamas and sink into bed. Some may read from a favorite book or listen to some soothing music. Then it's lights out.

But for the 15 million Americans across the country who suffer from chronic insomnia, getting to sleep and staying asleep becomes a chore, or worse, a trigger for anxiety.

While sleep medications may work for individuals with acute insomnia, those with long-term sleep issues such as chronic insomnia require a different approach.

That's where cognitive behavioral therapy for insomnia, CBT-I, comes in. It's a drug-free approach for the treatment of chronic insomnia that involves several treatment components, including an initial reduction in sleep to increase sleep drive and retrain normal sleep. It also serves as a method for eliminating time spent in bed while awake to weaken the association between being in bed and having anxiety about not falling asleep.

Clinical psychologist Bruce Rybarczyk, Ph.D., in the College of Humanities and Sciences at Virginia Commonwealth University, is a leading behavioral sleep medicine expert who has been conducting research on the benefits of CBT-I.

"Patients with [chronic insomnia](#) need to reboot their sleep system. They need to hit the reset button and get it operating correctly again – and the only way to do this is to retrain how they sleep," said Rybarczyk, who has been treating patients in his clinic using CBT-I.

"To begin rebooting the sleep system requires an understanding of what it takes to get to sleep," he said.

## **The sleep system**

According to Rybarczyk, before patients can begin to understand how the CBT-I can work for them, they must understand the science behind sleep. Before new patients begin treatment, Rybarczyk sits down with them and provides an overview of sleep – essentially an owner's manual to the sleep system. By understanding what is happening and not happening to their bodies as a result of their sleep system, they gain the knowledge to help them get their natural sleep system back in action.

He said that the sleep system is similar to a hybrid engine in a car in which the electric and gas components work seamlessly together. In the sleep system, a primary system is responsible for sleep drive, which sends the body drowsiness signals throughout the day. That is coupled with a secondary system, the circadian system, which helps consolidate sleep into a single block for the sake of efficiency. It keeps people asleep at night and masks feelings of drowsiness until bedtime.

"When individuals sleep well it's because these two systems work together seamlessly. But when it breaks down, the circadian system is no longer doing its part and in many cases working against normal sleep," Rybarczyk said.

The two parts of the sleep system each have their own pumps – one is governed by the hormone cortisol, and the other by melatonin. Cortisol,

an alerting hormone, is released in the second half of the day to mask feelings of drowsiness. In the evening, this cortisol infusion continues to mask the drowsiness until an individual's regular bedtime approaches.

About an hour before bed, the body and brain rollback the cortisol, and then a wave of drowsiness will come over an individual, preparing them for sleep.

"The body has timed itself to give that infusion right at an individual's bedtime to help him or her wind down and fall asleep," Rybarczyk said.

Once an individual has been comfortably sleeping for three to four hours, melatonin is released providing a second wave of drowsiness. This helps sustain sleep through the second half of the night.

It takes this combination of alerting and drowsy signals to facilitate consolidation of sleep into a block at night.

According to Rybarczyk, the circadian system is pliable – it will cooperate with whatever signals it is given by taking cues from an individual's behavior. Take for example someone who works an overnight shift in a hospital or warehouse or a traveler changing time zones. They are able to be awake and alert during night hours because they've reconditioned their sleep system to wake earlier than called for or to wake in the middle of the night.

Once individuals have a variable sleep patterns – going to bed late or sleeping earlier – a vital part of the sleep system is disconnected. Each time they do this, they further dampen those signals and their circadian system goes into quiet mode.

"That is the nature of insomnia – it's infinitely trainable, for better or worse sleep," Rybarczyk said. "Another aspect of this training that is not

related to the [circadian system](#) is old-fashioned conditioning – like Pavlov's dogs."

In the case of insomnia, instead of conditioning sleep, people have conditioned themselves for wakefulness in the nighttime hours.

"They repeatedly feel anxious, tense or aroused at bedtime and those feelings become paired with bed, blankets and nighttime hours – all cues of late night. Now, instead of feeling drowsy in response to those cues, they have done the opposite. They have created an alerting switch that flips on when they hit the nighttime hours," Rybarczyk said.

He said that people who experience good sleep have conditioning that drives their sleep to occur – they have ritual and routine. This could include brushing their teeth, reading a book, shutting off the lights, pulling up the blankets. This stimuli come together to condition a sleep response.

"After this, sleep comes automatically. They don't have to think about it – it's an effortless process," Rybarczyk said. "We have no awareness this is happening. We take it for granted; there is no effort or thinking that needs to occur to make [sleep](#) happen."

Provided by Virginia Commonwealth University

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