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## Circadian rhythm and sleep disorders: Blue LEDs to the rescue

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At the LED Workshop last April, our **keynote speaker, Cary Eskow**, spoke of how a room's lighting could alter the occupant's mood, and facilities like hotels or hospitals can exploit this to provide a better customer experience.

Light affects our circadian rhythm, the 24-hour day-night biochemical cycle that governs human metabolism, and research indicates that different light frequencies affect circadian rhythms, and thus sleep patterns, among other health-related aspects.

**From a Forbes article:** "In 1991, it was discovered that there are special light receptor cells in our retina wired directly to the central clock in our brains that regulates our circadian rhythm. It has since been discovered that those cells are receptive to different types of light than the rod and cone receptors that allow us to see."

Mariana Figueiro, director of the Light and Health Program at the Lighting Research Center at **Rensselaer Polytechnic Institute**, calls them Blue Sky receptors because they're sensitive to bright, intense light on the blue or short wavelength part of the visible light spectrum. RPI's research indicates that if we don't get a strong exposure to bright, blue light in the morning, it can delay our circadian rhythm, making it hard to fall asleep that night. This can be especially hard on older people's sleep patterns, where extended time spent indoors and the effects of aging on the eyes and the brain combine to really screw up the circadian rhythm.

Blue LEDs to the rescue: "...Dr. Figueiro **experimented with a new technique**. She used battery-powered blue LEDs on the top edge of safety glasses that patients [in a local nursing home] could wear for an hour or two a day. A preliminary study with 11 subjects showed that the light suppressed their levels of melatonin—a naturally occurring hormone that is produced at night—suggesting that the glasses could help regulate the body's clock."

Sleep problems can affect all of us, not just the elderly. Blue light therapy holds promise as a safe, cheap alternative to drugs.