



High CS values for daytime (left) and low CS values at night will comprise a 24-hour electric lighting cycle.

Sleep problems are all too common among older adults, especially those in long-term care facilities, and may contribute to depression, weight gain and, according to recent research, the onset and progression of Alzheimer's disease. Conversely, healthy, high-quality sleep improves overall health and well-being.

LRC Light & Health Program Director Mariana Figueiro began conducting research on her first R01 grant from the National Institute on Aging in 2010 and soon discovered that a tailored light treatment consisting of a robust light-dark pattern that changes in color and intensity over 24 hours can improve nighttime sleep and behavior in older adults with dementia. However, at that time, lighting technologies that would allow for widespread implementation of her research findings were not yet available.

Fast forward to 2015, when Figueiro was asked for a lighting recommendation for the new Cypress Cove memory care facility in Fort Myers, FL. The LRC project team was working on a lighting design for the facility using circadian stimulus (CS), a new metric developed by LRC researchers, to design and specify the lighting. LED technology and controls had vastly improved since Figueiro's initial research, and the LRC project team scoured the market for manufacturers of suitable products that

could effectively meet the CS recommendations.

Today, thanks to major advances in lighting and control technologies, residents of Cypress Cove will soon enjoy the benefits of lighting designed to entrain the circadian clock. Currently under construction, the new facility will house 24-hour cycled electric lighting that will provide high CS values for daytime activities and low CS values for evening hours—the first real-world implementation of a lighting scheme based upon Figueiro's research. USAI Lighting's Color Select wall washers and recessed downlights will be used to control quality, color and quantity of the light in common area spaces. Additionally, Ketra's G2 high-output linear accent luminaires and N3 satellites will be used to control the lighting and enable the dynamic circadian content, while Ketra's X1 touchpads will provide an elegant interface between the lighting system and its users.

The lighting principles and technologies utilized at Cypress Cove can potentially be transferred to benefit other populations: newborns in the NICU, students in schools, office workers, and eventually, the general public in their own homes.

For more information about LRC Light & Health research, visit www.lrc.rpi.edu/programs/light-Health/index.asp.

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