Circadian lighting system explores ways to keep people with dementia safe and happy

Trials are underway to discover the extent to which circadian lighting systems can reduce levels of anxiety, stress and agitation in people with dementia.

INTERVIEW WITH
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Co-Founder, Skyjoy

INTERVIEW WITH
Lloyd Crawford
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Circadian lighting, which aligns the body to natural daily cycles, helps reduce anxiety and stress and can offset a condition referred to as 'sundowning.' While undergoing trials, early evidence suggests a positive impact of this lighting approach, also known as human-centric lighting.

Benefits of circadian lighting approach

Circadian lighting systems follow the natural sleep/wake cycles of the circadian rhythm — our 24-hour internal clock. The Society of Light and Lighting defines it as 'lighting systems, which adapt to the changing needs of an individual throughout the day to allow them to receive the varied spectrum and quantity of light in relation to their natural circadian rhythm.'

In humans, signals from the eyes tell the hypothalamus part of the brain when it is day and night and control the amount of melatonin and serotonin released to correlate sleepiness with darkness and alertness with light. Dementia design expert Dr Pamela Topping says a balanced cycle reduces stress and anxiety, leading to greater contentment.

Reduced sundowning and improved staff environment

Circadian lighting can also reduce 'sundowning,' where care home residents may become agitated and restless as evening approaches. Altering the early evening light makes residents much calmer, insists Topping, which creates a calmer working environment for staff. "Residential homes have a high percentage of staff turnover, and it can be difficult to keep staff in positions, as dementia is a very challenging condition," she adds.

The pioneering system is easily installed in all areas of a property, such as bedrooms, day rooms, bathrooms and nurse stations, as well as communal areas. Batteryless, kinetic switches on the walls connect to lighting via Bluetooth without cabling. "Nurses and caring staff are very much the focus of the lighting as well," says Topping.

Three elements of the lighting system

Her co-founder, Lloyd Crawford, is an established lighting expert in Northern Ireland, specialising in industrial, commercial, exterior and healthcare sector lighting.

Topping trained as a nurse, then studied 3D design, and obtained a master's in design and a PhD in design for dementia.

As Fellow of the Society of Light and Lighting, Crawford states that the three elements of the Skyjoy system are: (1) circadian lighting, (2) intelligent sensing and (3) cloud-based artificial intelligence (AI).

The innovation is about better replicating daylight in locations, such as nursing homes and care facilities, where people may spend time away from daylight. "It has been demonstrated that circadian lighting improves wellbeing, reduces anxiety and stress; and that has a knock-on benefit on staff and families of people with dementia," he explains.

Lynne Green of Belfast Central Mission, manager of Kirk House, agrees: "In the relatively short time the lights have been installed, we can already see improvements in the wellbeing of the residents."

Intelligent and discreet sensors

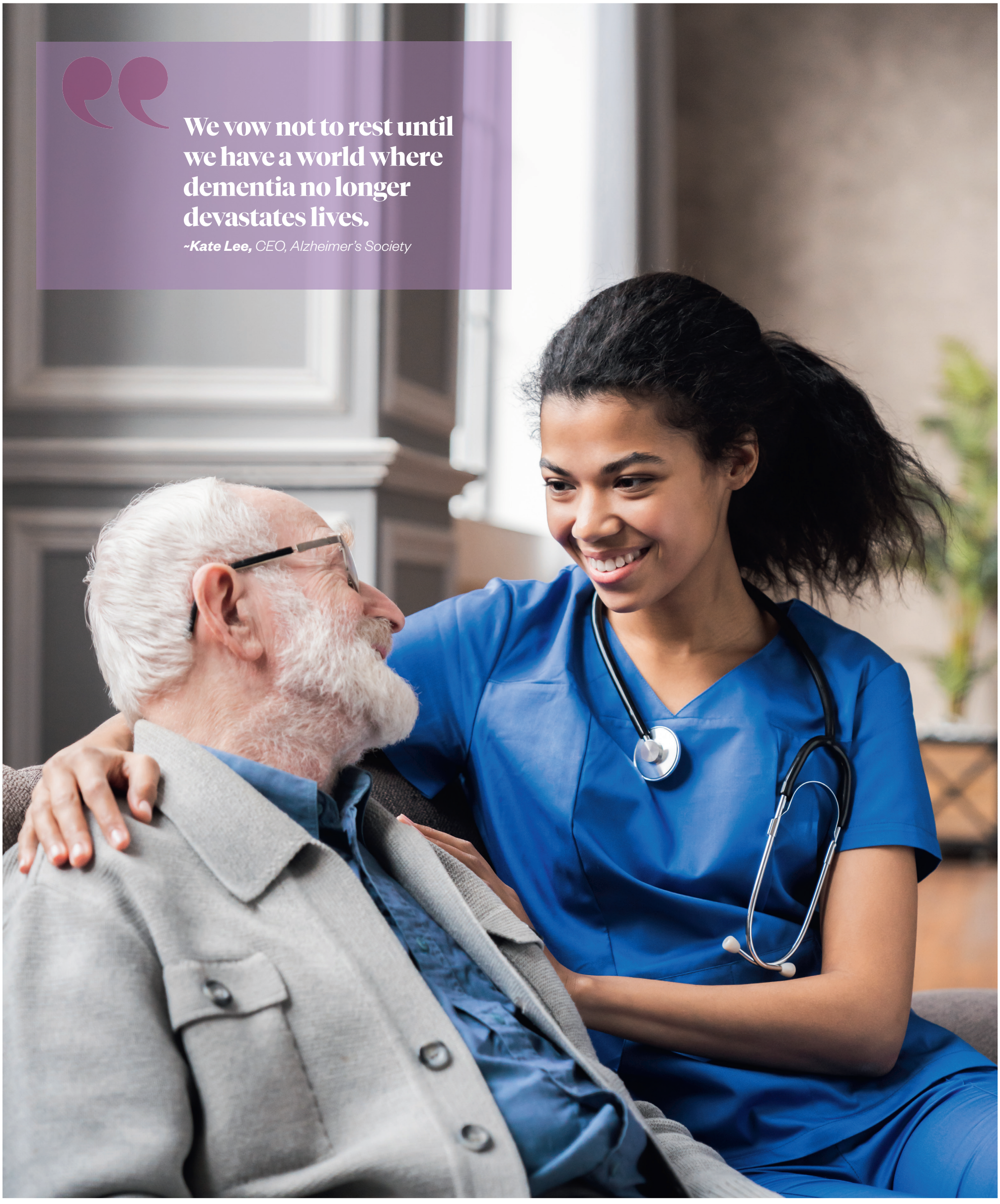
The intelligent sensors within every lighting do not record images but sense residents' movements and collect data on patterns of behaviour. Data gathered from the sensors can provide research value for care homes as well as for academics, clinicians and architects who are designing nursing homes. Through its AI component, it will improve the performance of the circadian lighting and even has the potential to recognise falls and alert carers.

Lighting system based on evidence

Crawford says one trial in a nursing home in Northern Ireland is now moving into a longer-term assessment while another has started in a sheltered dwelling scheme. Skyjoy is working with Ulster University to produce evidence-based research with the system undergoing a qualitative and quantitative assessment.

The company has been shortlisted for the Longitude prize on Dementia and received a SHAPES award – a Europe-wide project supporting innovative technologies for smart and health ageing. While acknowledging there is still further research required, such as how people react to daylight in different parts of the world, Crawford believes circadian lighting systems will improve the lives of people with dementia by optimising their environment.

Find out more at
skyjoy.co.uk



We vow not to rest until we have a world where dementia no longer devastates lives.

~Kate Lee, *CEO, Alzheimer's Society*