

# Blue light switches on benefits

Artificially created melatonin-suppressing blue light can improve patient outcomes and invigorate healthcare staff. **NICHOLAS MARSHALL** reports.

Lighting can now be used not only to optimise vision but also to affect how people feel – there are strong indications that a particular type of light can improve patient outcomes and the way in which clinicians and other healthcare staff work.

Melatonin-suppressing blue light has the ability to invigorate and increase the feeling of wellbeing of individuals, and Philips has created a new type of blue lighting branded as ActiViva.

The amount of blue light emission is optimised in ActiViva lamps. The lighting provided is high quality in line with the latest norms and standards and it makes individuals feel more alert and energised.

Trials involving the new lighting have been conducted in offices and warehouses, and now the company is turning to experimentation in the areas of healthcare and education.

Within healthcare, patient centric and staff centric issues are being probed.

Those working in the perioperative field could potentially benefit significantly from the delivery of blue light from operating theatre ceilings and upper wall areas. Blue light lamps would replace, not be in addition to, existing lamps in order not to add to the heat burden within the theatre and upset any controlled airflow systems present.

In hospital circulation areas and day rooms, blue light could be used to increase the feeling of wellbeing of all individuals using them.

Blue light might be used selectively in general wards to improve patients' feeling of wellbeing, and would not interfere with lighting that allows optimal observation of skin tone.

## EXPERIMENT

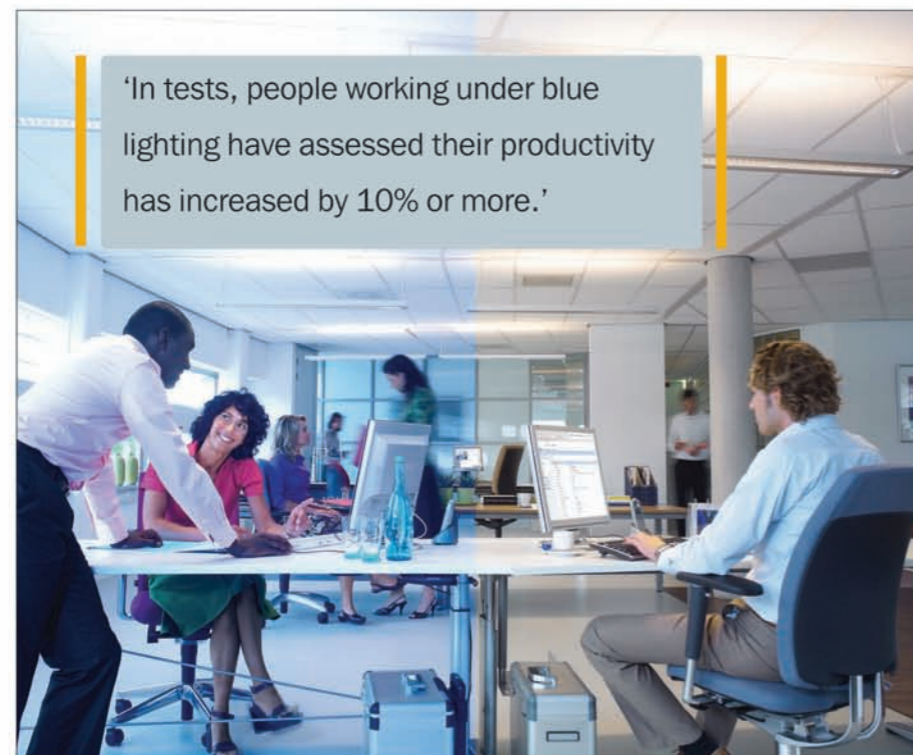
In an experiment in a new children's hospital, blue light from bedhead downlighters is being used to create artificial dawns. Being examined is how the light, passing through the eyelids of children asleep, stimulates physiological systems and leads to a less stressful wake-up process.

The company says that no claims are being made for blue light as a treatment for patients with Alzheimer's disease, but it points to independent research which has indicated that exposure to blue light does

have a positive effect on sleep of patients for whom the disease is in the early stages. In later phases, it is evident that brain degeneration prevents blue light from being processed – and a positive effect is not created.

If patients with Alzheimer's disease have improved sleep and better rest, demands on carers – either in the healthcare setting or at home – can be reduced.

Possible benefits of artificially created blue light for those individuals suffering from seasonal affective disorder syndrome (SADS) are being explored. If blue light is introduced into the light treatment for these individuals, an advantageous reduction in overall luminance may be possible, and treatment times may be shortened.



It is recommended that there is a small buffer or transfer zone positioned between an area where blue light is applied and one in which normal lighting is installed. A buffer zone allows individuals leaving an area having blue light, and entering one with less crisp lighting, not to perceive the latter as "dingy".

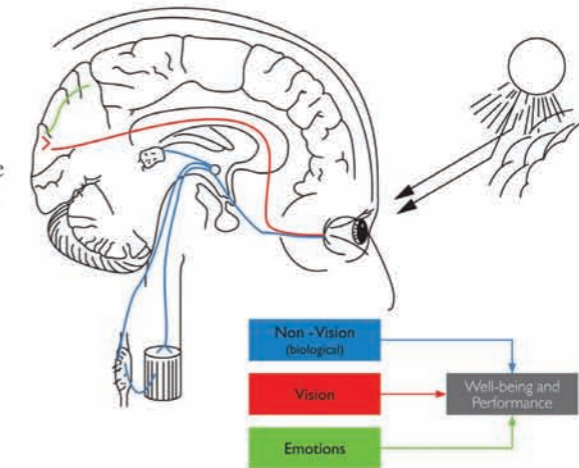
Healthcare staff working in areas in which it would not be appropriate to have blue lighting installed could take "blue light showers", in refreshment breaks, for example, to suppress melatonin.

A "blue light shower" lasting some 20 minutes might effectively achieve melatonin suppression until the next break. The length of time necessary for such showers to be effective is currently being studied.

## PRODUCTIVITY INCREASE

In tests, people working under blue lighting have assessed their productivity has increased by 10% or more, and that the incidence of headaches has decreased. It is acknowledged that crisper light achieved by blue lamps means more acuity.

Established has been that people leaving an environment in which blue lighting is employed and entering a conventionally lit environment return immediately to their normal melatonin production cycle.



Light reaching the eye travels through the lens to the retina, and neurological signals are generated and directed to the brain where they are translated into images. About five years ago, a third receptor was discovered in the eye – in addition to the rods and cones.

While the rods and cones communicate visual effects, the third receptors are highly sensitive to blue light and transmit signals that assist the biological clock to function effectively.

Melatonin, recognised as being either a direct inducer of sleep or a trigger that

indirectly induces sleep, is a naturally occurring hormone synthesised from serotonin in the pineal gland. Melatonin production has a pronounced circadian rhythm. Requiring more investigation is how melatonin suppression achieved artificially leads to better quality sleep.

Philips says it will support continued support into research into effects of blue light on the hormonal system. Its blue light lamps are retrofit, low mercury products having the same installation requirements and life expectancy as normal fluorescent lamps.

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